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Adaptation of Public Health Programs to Defense Needs*

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ONE of the outstanding problems facing us in the present emergency is the evaluation of tasks in the order of their importance to national defense and security.

Like many other groups, persons engaged in public health work wish to identify their normal activities with the defense effort. On all sides one hears rather dubious cliches to the effect that the prosecution of total warfare involves total defense. It is pointed out that the health level of the nation as a whole must be raised, that the educational status of the country must be improved, that the morale of the entire population must be placed upon a firmer basis. Everything we undertake—or would like to undertake—has, it seems, a direct and important bearing on defense—whether the measure be designed to increase the vitamin content of food products, to insure the birth of healthy infants, or to lengthen the span of life.

Fundamentally, of course, this concept of total defense is sound. Nevertheless, there is danger that it may result in a dispersion of effort which is ill suited to the requirements of the moment. If the nation were embarking upon a thirty year war, and could pursue it leisurely, emphasis on a comprehensive and long-range program would certainly be justified. Today, however, war is neither planned nor fought according to the protracted methods of the past. If effort is distributed over too many diversified activities, or if plans are made primarily with an eye to the distant future, the blitzkrieg is likely to overcome our country before we are well into the planning stage.

With so much to be done, so little time in which to do it, and such limited facilities for doing it, this is an occasion when things of immediate importance must come first. Health officers and others in the field upon whom the administrative responsibility falls will have to concentrate on those activities which are most important and most urgent. Stated in the simplest terms, this means

* Read before the Health Officers Section of the American Public Health Association at the Seventieth Annual Meeting in Atlantic City, N. J., October 16, 1941.

that they must give first thought to safeguarding the health of our soldiers, sailors, and workers in defense industries—those who are being trained to do the shooting and those who are providing the guns and materials with which to shoot.

The Army and Navy have their own medical and sanitary corps. Within the limits of their authority, these organizations are doing fine work in protecting the health of soldiers and sailors, but their efforts cannot be successful unless they have the full coöperation of civilian health agencies. The health and well-being of the men in the barracks depend to a great extent on conditions outside of the cantonments, conditions over which Army and Navy medical and sanitary officers have no control. Men in training spend considerable time "off post." While on maneuvers or leave of absence they travel long distances. Basic insanitary conditions or laxity regarding matters of social protection in communities frequented by military personnel may result in individual ill health or the introduction of disease into a military establishment. Even more especially, civilian health authorities have a direct responsibility for the health of the greatly increased force of industrial workers now engaged in producing essential goods. If the Army and Navy are to be supplied with the materials they need, not only must defense workers be kept on the job but also they must be kept there at a maximum level of health and efficiency.

Now, what are the chief problems encountered in adapting the health services of the country to defense needs? As far as communicable diseases are concerned, the only ones which have given any real trouble to date are the venereal infections. The coming winter, however, may provide a test of whether or not we will continue to be so fortunate in this respect. Last winter conditions were rather favorable. Relatively few soldiers had actually arrived in the camps, and many of them were partially seasoned troops. True, large numbers of construction workers were employed in defense areas, but they were more or less inured to hard work and exposure. This winter the camps will be filled to capacity. Many of the men will be new recruits who have not developed immunity to various infections which they may encounter in their new locations. It will therefore be necessary for both civilian and military health authorities to be on the alert for every sign of communicable disease.

Except for the venereal diseases, which I shall mention again later on, the greatest tasks encountered so far have been those dealing with elementary sanitation — the provision of fundamental sanitary services such as safeguarding water and food supplies, removing garbage, and disposing of sewage. Only those who have seen the insanitary conditions of boom towns are able to appreciate problems now confronting health authorities in many localities. Almost overnight, communities have sprung up in which no facilities for sanitation have yet been provided. In other places, the sudden increase in population has rendered existing facilities altogether inadequate. To indicate the magnitude of this problem, I may cite summary findings of the reconnaissance surveys undertaken by the U. S. Public Health Service. In 184 major defense areas surveyed, it was estimated that more than 105 million dollars would be needed to provide essential water, sewerage, and garbage disposal facilities for the contained communities. This is only a portion of total needs, since many secondary defense areas are not included in the estimate. Furthermore, other major areas are yet to be established for which no prediction of sanitation requirements can be made.

In many instances it is utterly impossible for the communities in question to provide the facilities through their own resources. Take the example of a small southern town adjacent to a newly constructed military camp with a strength of about 14,000 men. Before the camp was built the town's population was 625; today it is over 5,000. Whereas there were formerly two restaurants which did little business, ten are now operating to capacity, to say nothing of about forty "juke joints" where drinks and light lunches are served. The town had no local health organization whatever. There was no sewerage system. Public toilet facilities were limited to two single toilets in the basement of the courthouse, and these were restricted to use by white persons. Several artesian wells provided drinking water, but because of a marked sulfurous taste the townspeople preferred the water from a shallow well in the courthouse square, which was found to be heavily contaminated from a nearby cesspool. The artesian wells flowed continuously from unfaucеted pipes and drained into the surrounding lowland where malaria-bearing mosquitoes bred in profusion.

To meet the critical situation in which this town suddenly found itself, at least $80,000 was needed for a sewerage system, $25,000 for water supply and distribution, $20,000 for a health center, and about $15,000 a year for the maintenance of a local health department—a total of $140,000. But the aggregate income from taxes during 1939 was only $720! The income during 1940 was said to be more—about $1,200. Nobody was quite certain of the amount because there had not been enough money to hire an auditor.

Nevertheless, prompt action was imperative. With the emergency health and sanitation funds provided by Congress, the Public Health Service made available through the state health department a commissioned medical officer to organize an emergency local health department. Assisting him were an engineer, a nurse, and a clerical worker provided by the state and county. They are still there, working under the direction of the state health department. All four of them and their equipment are crowded into the eight by twelve foot jury room, a small section of which has been curtained off for clinical purposes. When a jury convenes, the health department simply moves out. By scheduling field work on these occasions, this resourceful health officer makes a partial adjustment to a rather unsatisfactory office arrangement.

In the short time of its operation this rudimentary health unit has done remarkable work. With the aid of county funds and WPA labor, a modern comfort station has been erected in the center of town. Malaria control measures have been instituted and supervised. Dairy and restaurant inspection has been rigidly maintained, and today elementary sanitation is provided even in the "juke joints." The town officials were induced to apply a sledge hammer to the housing of the contaminated courthouse well, and to seal the well with concrete. A venereal disease clinic has been established, and close coöperation is maintained between military and civil authorities in prostitution repression, case reporting, and contact tracing. These activities represent only a beginning. With proposed improvements such as an adequate water supply, a sewerage system, and a health center—now possible through funds provided by the Community Facilities Act recently passed by the Congress—this town will be assured fundamental measures for protection of health.

Problems similar to those encountered in this small southern community exist in many other defense areas throughout the country, and are being met in a similar way. While the initial capital

grants for the additional facilities and services will have to be provided in most instances by the federal government, many of the communities which will benefit by defense activities should eventually be able to assume a major share of the financial burden. The increase in population, business, and property values will provide a basis for tax income which can be utilized to pay for and operate the improvements.

But there are several obstacles beside lack of funds. The health organization of this country is complex, uneven, and diversified. Administrative jurisdictions overlap and sometimes conflict. In many localities health laws and ordinances are lacking; in others they are inadequate. In some places enforcement of existing laws is not seriously attempted. Many defense establishments are of necessity situated in rural or semi-rural areas where zoning regulations to determine the uses of property have not even been thought of. In such areas a person is at liberty to set up almost any kind of establishment he wishes, wherever he wishes, and operate it as he pleases. As a result, the usual practice of health authorities is to wait until an intolerable situation has developed and then hail the operator into court for maintaining a nuisance. Many situations of this type can be prevented if health officers will exercise foresight and see that needed restrictions are enacted and put into effect. Where proper health regulations are nonexistent or where they are not enforced, correction can often be achieved by having the military authorities declare the offending establishments " out of bounds." This has had a prompt and salutary effect in most instances, but it is a " last resort " measure and is equivalent to an admission that civil government has failed. Another stumbling block, legal in character, arises from low debt ceilings and lack of authority to issue bonds for public improvements, especially bonds to be retired by income from use of the proposed utilities. Further difficulties result from the absence of legislation which would enable public bodies to operate facilities even though they may be constructed as outright grants. There are, for example, areas in which no public agency has authority to construct or operate a hospital. In some states, cities and counties cannot maintain a hospital jointly. An aggregation of dwellings gives rise to need for sanitary facilities, but unless this population group forms a body politic, it is not in a position to construct or operate such facilities. State and local health departments should have been aware of these legal deficiencies, but apparently they were not; they even neglected to act after being warned by federal agencies, and when the emergency arrived, many were wholly unprepared.

The greatest problem of all, however, is the shortage of properly qualified and trained personnel. If all other difficulties could be resolved at once through the acquisition of facilities and organizational framework necessary for the task—health agencies would still lack trained man power. One need not have the gift of prophecy to foretell that the personnel problem of health departments will become more acute as the defense effort of the nation is increased.

Since 1936 an extensive program of postgraduate training for public health personnel has been carried on with funds made available to the states by the Federal Social Security Act and the Venereal Disease Control Act. In these five years both the quantity and quality of professional health personnel have increased very markedly. Nevertheless, the supply is still inadequate. Last April, with emergency funds voted by Congress, the Public Health Service began to recruit and prepare public health workers for special defense activities. After a short period of orientation in which the re-

sources of the National Institute of Health are used, these workers—physicians, engineers, nurses, and laboratory personnel—are assigned by the Service to communities where they are most urgently needed. They are paid with federal funds, but are responsible directly to the state or local health departments to which they are assigned. In so far as possible an effort has been made to enlist persons who are not already employed by state or local health agencies, but sometimes it becomes necessary to depart from this practice because federal civil service regulations require that persons be accepted from established registers. Our aim has been to provide highly mobile units which can be utilized to speed the defense program in critical locations. To date, 426 professional workers, including 98 members of the regular and reserve corps of the Public Health Service, have been detailed to general health and sanitation work, industrial hygiene, and venereal disease control activities. Comprising the total are 94 medical officers, 171 engineers, 112 nurses, and 49 laboratorians and specialists. To these will be added others. As soon as one group of recruits has completed the orientation course, another group is ready for induction. This process will be continued until the more pressing needs have been satisfied.

Of course, this emergency orientation program of the Public Health Service hardly does more than scratch the surface of the total personnel problem. It is hoped, however, that existing methods may be incorporated into a more comprehensive system that will meet health demands not only within special defense areas but also throughout the nation.

In the main, essential health services for the general civil population throughout this country will have to be provided by the states and communities themselves. State training programs must be continued, but this alone will not be enough. There are two other ways in which the disparity between personnel needed and available can be at least partially resolved. First, health departments must enlarge the scope of their training activities. Second, when necessary they must dilute their staffs with personnel whose qualifications and training are of a somewhat lower grade than would be acceptable under normal circumstances. It is not meant that persons who are wholly untrained should be employed, but rather that some partially trained workers will have to be utilized for the duration of the emergency. It may be necessary to apply similar dilution throughout the entire organizational structure of our health units. This statement does not imply that merit systems of personnel administration should be disregarded. It is possible to adapt merit systems to current needs by setting up interim classifications in which persons with lesser qualifications may be hired on a temporary basis to meet urgent needs. Thus, if three engineers are needed in a community where only one is available who meets the qualifications for the title "sanitary engineer," a lower classification such as "acting sanitary engineer" or "sanitary engineering aid" might be set up to permit temporary employment of the other two.

Consideration must also be given to enlargement of function. Health departments have traditionally regarded themselves as educational and law-enforcement agencies. They have been content to find out what ought to be done and to tell others how to do it. Operation of facilities has been shunned even when the facilities bore a direct relationship to the health of the community. This attitude is not suited to the present emergency. If some essential tasks are to be accomplished at all, health departments will have to break a few precedents and do them—with their own personnel. They may be re-

quired to operate new water and sewerage plants as well as hospitals and clinics. They may also find it necessary to assign engineers and others from their staffs to operate facilities from which regular personnel are called for military duty.

An old problem which has placed a tremendous burden upon health departments is control of the venereal diseases. This has always been a source of trouble during periods of military mobilization, and the present is no exception. Since the last war, our resources for combating these diseases have been materially increased by the development of new therapeutic methods, but improved therapy is not the complete answer; it must be accompanied by vigorous repression of prostitution and effective contact tracing. Furthermore, repression and contact tracing on a local basis are not sufficient. Prostitutes who are compelled to leave one town or county quickly invade the neighboring ones. Even state-wide action is not enough by itself. Present-day transportation facilities which enable both prostitutes and their patrons to move readily from place to place add greatly to the difficulties of contact tracing. Health units today should be staffed and equipped so that they can coöperate in venereal disease control work with military and civil health authorities not only in nearby jurisdictions but also in distant places. Again this requires additional personnel. So does coöperation with welfare authorities, which is essential if the itinerant and local girls who engage in casual prostitution are to be reclaimed before they become confirmed in the profession. The chances for rehabilitation of these girls would be greatly increased by the provision of suitable places of detention where they could be treated and given training for useful pursuits. Penal institutions not only are inadequate but are altogether unsuited to this purpose. Here, too, it is hoped that by means of funds made available through the Community Facilities Act some such accommodations can be provided, preferably in conjunction with appropriate state institutions.

The defense program has also made it necessary to give increased attention to industrial hygiene. The effective use of modern machines calls for efficient workmen. It is estimated that even in normal times the nation loses about 350,000,000 man-days a year through all types of industrial disability. A substantial proportion of this disability is caused by circumstances arising out of the nature of the job or the conditions of the working environment. Acceleration of production for defense has intensified existing industrial hazards and created some new ones. The fatigue factor which is responsible for so many costly accidents has assumed greater importance than ever before. Sanitary, safety, and medical care facilities have had to be provided in hundreds of new and expanded defense establishments. It has been necessary to investigate the potential hazards involved in the use of new materials and processes, and to develop safeguards when needed.

A special effort has been made to establish and strengthen industrial hygiene divisions in state and local health departments. Included among the emergency health and sanitation personnel previously enumerated are 26 trained persons loaned by the Public Health Service to aid these divisions in their work. Also mobile units of specially qualified physicians, engineers, and chemists have been provided to conduct surveys and make recommendations in places where states did not have the necessary resources. The Public Health Service has also surveyed arsenals and other industrial establishments operated by the War Department and is now conducting investigations in government-owned but privately-operated defense plants.

Another important task with vital bearing on our national security is physical rehabilitation of young people throughout the country—the group on whom the nation must rely for both its military and industrial man power. Some health authorities frequently extol the United States as the healthiest nation in the world. If anyone is impressed by complacent generalities of this sort, the figures showing the rejections for selective service ought to disabuse him. We may be a healthy nation in respect to communicable disease rates, but according to any absolute physical standard there is certainly no reason to be proud. Since the draft examination data were made public, there has been considerable discussion of rehabilitation, but little has actually been accomplished. These findings represent a general problem which public health authorities must face, but so far as I am aware no comprehensive state program has even reached the planning stage.

Let me add here that at the outset of the national emergency, the Public Health Service assigned one of its medical officers to the headquarters of each Army corps. This assignment has greatly facilitated operations of the health aspects of the entire defense program. Furthermore, it has served to bring the military authorities, particularly the medical corps, into close touch with state and local health workers and thus has given a measurable impetus to public health activities in general. Appropriate credit is due the state health authorities and the local communities for their efforts to cope with the emergency. This effort is expressed by the diversion of approximately $1,689,000 federal and state grant-in-aid funds to defense areas and by the appropriation of $639,000 of new money by the localities concerned. This, of course, does not take into account budgets for the support of preëxisting health organizations.

CONCLUSION

In conclusion, it should be said that as the national emergency grows more acute we of the public health organization may not be able to do everything that is considered desirable for all groups of the population. In some instances customary activities will have to be curtailed in order to devote time and effort to immediate defense tasks. It may be necessary to go farther than this; health departments may have to share their personnel with other agencies even more generously than they have to date. If health officers whose departments are already under-staffed feel that this is asking too much, I would ask them to consider the predicament of an Army post surgeon to whom I spoke several months ago. In the area around his camp, all the chaos associated with construction prevailed. An epidemic of influenza was threatening, and some 20,000 fresh troops were scheduled to arrive. Yet there was not a single physician, engineer, or nurse with public health training under the command of this medical officer. As a matter of fact, all there was in the way of public health organization was a single veterinarian who in civil life specialized in the care of pet animals. The post surgeon was not very happy about the prospect. This, of course, represents an extreme situation during the early organization of the defense program. Needs, less dramatic but perhaps equally important, exist today, and they are certain to increase in number as the emergency requirements increase. When demands for trained personnel arise in the military establishments, they must be filled at once, even though doing so means taking people away from other jobs. As a group, we must be prepared to abide by certain priorities in health work just as we do in regard to iron, steel, rubber, and other vital defense needs.

Eventually our efforts, if properly

directed in this emergency, will redound to our permanent benefit as well as to that of the nation.

When the crisis is over, some of the additional facilities established for the emergency will probably be dismantled, but many of them will remain in use. The tradition of essential service will endure under all circumstances. As a result, the health organization of the country as a whole will be on a higher level than it was before. We will then be in a better position to develop some of those optional services having to do with improving the health status of the general population. Until then, first things will have to be placed first on the agenda.

WANTED: The following issues of the *American Journal of Public Health*—April, 1911; February, 1937; January, 1938; February, 1939; July, 1941; and August, 1941. The American Public Health Association will be glad to pay postage for the *Journals*.

Mobilization of Industrial Hygiene for National Defense*

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SCARCELY more than a quarter of a century has passed since industrial hygiene has attained recognition in America as a special field of endeavor for maintaining and promoting the health of industrial workers. Prior to this period, emphasis was placed on the surgical treatment of injuries and the alleviation of illness rather than on preventive measures. Frequently the emergency care of injuries was the only motive for providing medical services.

Many factors have contributed to our present broader concept of medicine's serviceableness to industry. Not least among these were the courageous efforts on the part of a small group of men with a keen sense of responsibility to their fellow men who, despite little general interest on the part of professional groups in the subject, banded themselves together through the Industrial Hygiene Section of the American Public Health Association, the American Association of Industrial Physicians and Surgeons, and other organizations for the purpose of fostering the study and discussion of the problems peculiar to the field of industrial hygiene.

By an Act of Congress passed in 1912, the U. S. Public Health Service was authorized to "extend its research functions to the study and investigation of all diseases of mankind and conditions influencing the propagation and spread thereof." As a result of the passage of this Act, the Service established in the Marine Hospital at Pittsburgh, Pa., during the year 1914, the Office of Field Investigations into Occupational Diseases. The name was changed in the following year to the Office of Field Investigations in Industrial Sanitation and the office was transferred to Washington in 1918. The creation of this office in the U. S. Public Health Service marked an important forward step in the advancement of industrial hygiene. The improvement of industrial health became in this way a national concern.

During the year 1914 the Industrial Hygiene Section, the fifth of the present ten sections of the American Public Health Association, was organized. The Conference Board of Physicians in Industry also was established in 1914. This Board acted in an advisory capacity to the National Industrial Conference Board. The following year saw the organization of the American Association of Industrial Physicians and Surgeons. In 1920 the American Medical Association recognized the existence of this special field by merging industrial medicine with preventive medicine and public health in the Scientific Assembly. It was not until 1937, however, that the governing bodies of the American Medical Associa-

* Chairman's Address delivered before the Industrial Hygiene Section of the American Public Health Association at the Seventieth Annual Meeting in Atlantic City, N. J., October 14, 1941.

tion organized the Council on Industrial Health as a standing committee of the Board of Trustees. Since its organization the Council has made important contributions to industrial health. It has been active in stimulating the formation of committees on industrial hygiene in state and county medical organizations, and has established working relations with all agencies interested in industrial health.

During the 1st World War impetus was given to industrial hygiene through national agencies. The creation by act of Congress in 1916 of the Council of National Defense, which provided for the appointment by the President of an advisory commission, resulted in the formation of a number of committees and subcommittees not unlike those of today. One of these subcommittees, known as the National Committee on Welfare Work, issued a series of reports aimed at aiding employers in the vital industries to maintain and conserve the health and efficiency of their workers through improved working and living conditions and improved training methods. During this period personnel of the U. S. Public Health Service was detailed to the Working Conditions Service of the Department of Labor and functioned under the name of the Office of Industrial Hygiene and Medicine. The personnel of this office supervised the sanitation and medical service in as many of the industrial establishments owned or operated by the federal government as was possible with the limited personnel assigned to carry out these functions. This coöperative work with the Department of Labor was discontinued in 1919 because of lack of funds, and the organization reverted to the U. S. Public Health Service. The name was again changed to the Office of Industrial Hygiene and Sanitation, which is now the Division of Industrial Hygiene and Sanitation, located at Bethesda, Md. The excellent record in scientific investigations in a number of occupations and dangerous processes made by the Public Health Service through this division is well known.

Other federal agencies, particularly the U. S. Bureau of Mines and the U. S. Department of Labor, have been active in this field and have conducted numerous investigations and laboratory research which have thrown light on some of the pressing problems affecting the health of workers in a variety of industries and mines.

During the intervening years many national and local associations, either wholly or partly devoted to the advancement of industrial hygiene, have contributed to our knowledge in this field. A few of the universities began to offer courses in subjects pertaining to industrial hygiene, and some of the insurance companies engaged personnel to assist their insured industrial organizations with a solution of their health problems. While time will not permit even a brief review of the various activities of these agencies, their contributions have been many and have served to focus attention on prevention as a cardinal principle for reducing the incidence of disability, whether through accident or disease.

The organization of industrial hygiene departments in many of the states and in some municipalities has made available to industry a valuable service which will be increasingly used as their work is demonstrated. As recent as ten years ago only a comparatively few states offered this service to industry, while today 34 states and 4 cities, aided where necessary by federal funds and by personnel from the Division of Industrial Hygiene of the National Institute of Health, have well organized departments.

These and other factors, such as the passage of state compensation acts for occupational injuries, the accident prevention movement, the acceptance on the part of enlightened management of

the principles on which health services to industry are based, and, more recently, the enactment of the occupational disease compensation laws in many states, have all contributed to the expansion of health facilities in industry and have pointed to the necessity of conducting research in fields which offer greater promise in reduction of disease and suffering.

Today industrial hygiene is recognized generally as a part of a good public health program, and may be defined as that branch of the medical, engineering, chemical, and nursing sciences which is concerned with the study of the effects of environmental conditions in industry upon the health of industrial workers from the point of view of the incidence, the causes, and the nature of the effects, and with the means of eliminating or minimizing the causes, and thus removing or modifying the effects. Industrial hygiene also is concerned with the general effects of industrial life on the incidence of all diseases, and aims at rendering the industrial worker safe, healthy, and efficient.

This brief summary of the development and scope of industrial hygiene activities is recounted for the purpose of indicating the progress of the industrial health movement and of pointing out the chief industrial hygiene resources of the country.

In the mighty defense effort in which we are now engaged, the mobilization of these resources, as well as careful planning of new activities and the training of additional personnel must be given a conspicuous place in the national defense program. The reason lies in the fact that wars which were formerly fought between armed forces on a restricted battlefield have given way to total war and total defense, where industrial capacity is more important than arms, and where adequate man power in vital industries is a major military factor. The very urgency of our defense requirements has emphasized the need for a well planned program of industrial hygiene for the protection and conservation of health among defense workers.

The importance attached to an effective health maintenance program was stressed by Dr. Daniel L. Lynch in his presidential address before the Association of Industrial Physicians and Surgeons last May when he said:

> The industrial workers' physical fitness, their freedom from preventable disease and injury, their morale or mental stamina, their ability to achieve for national defense, will determine almost entirely the effectiveness of all other efforts. Desirable in the easy days of peace when no cloud of war blackened the horizon, it is imperative now that the workers in industry, especially, "must be physically tough, mentally sound, morally strong." If they are not, we can leave our planes unbuilt, our battleships in blueprint. We shall not need them.

It remains to be seen how well those responsible for planning and directing an industrial health program have met this challenge, and similarly how we in the industrial hygiene field have responded to the call for service with all the increased opportunities and responsibilities that are ours.

The mobilization of the medical and health resources of the nation and the responsibility for coördinating all health and medical programs affecting the national defense found expression first through the creation on September 19, 1940, of a Health and Medical Committee by the reëstablished Council of National Defense. Later, the Council, by Executive order of the President, transferred the Health and Medical Committee to the Federal Security Agency for the purpose of advising and assisting the Administrator in carrying out his duties as Coördinator of Health, Medical, Welfare, and Related Activities.

One of the first acts of the Health and Medical Committee was the appointment of six subcommittees, each

representing broad segments of medical interests. Of particular interest to this group is the Subcommittee on Industrial Health and Medicine under the able chairmanship of Dr. C. D. Selby. This subcommittee is charged with the duty of making specific recommendations pertaining to activities in this particular field to the Health and Medical Committee.

The Subcommittee on Industrial Health and Medicine has been transferred within the past month to the Office of Health Defense and Welfare Services in the Office for Emergency Management, under the directorship of Paul V. McNutt, following the creation of this new organization on September 3, 1941, by President Roosevelt. The members of this subcommittee also have been appointed as a Committee on Industrial Medicine of the Office of Scientific Research and Development of the National Research Council.

An early recommendation of the subcommittee was that the Division of Industrial Hygiene of the National Institute of Health, because of its years of research and experience in this field and its close relationship with national, state, and volunteer agencies either directly concerned or interested in the industrial health problems of national defense, assume the leadership in a program for achieving the defense objectives. Other specific recommendations made by the subcommittee called for an expansion in personnel facilities and funds of state bureaus of industrial hygiene and the Division of Industrial Hygiene of the National Institute of Health; the training of large numbers of personnel in industrial medicine, hygiene, and nursing; the safeguarding of the health of workers employed in the industrial organizations of the War and Navy Departments; and further researches into new industrial processes which might be injurious to the health of exposed workers.

These recommendations were approved and at the present time are being carried out. In order to facilitate the work, Surgeon General Parran has created a new section in the Division of Industrial Hygiene of the National Institute of Health, with Sanitary Engineer J. J. Bloomfield in charge. This section is concerned with all national defense activities and states' relations in industrial hygiene.

The activities of this section as well as those of the section on industrial hygiene research, in charge of Dr. Paul A. Neal, are being carried out under the general direction of Medical Director J. G. Townsend, Chief of the Division of Industrial Hygiene.

The work of the division has been supplemented with fifteen teams or units, each unit consisting of a specially trained physician, an engineer, and a chemist, with additional personnel as required, serving as mobile field units available to go anywhere in the country to survey health hazards in war industries and to provide consultation service, in coöperation with the state and local health departments, to any defense industry requiring such assistance.

The accomplishments already attained by the Division of Industrial Hygiene of the National Institute of Health in the field of industrial hygiene and in the toxicological research on defense materials, and by studies on the effects of physical and other environmental factors, particularly those of an emergency nature, as well as the many accomplishments of state industrial hygiene units which are all engaged in furnishing services to defense industries, have been described on several occasions elsewhere and need not be enumerated here.

Coöperative programs with other divisions of the Public Health Service and with various other governmental bureaus, as well as with independent agencies, will bring to the industrial

worker the benefits of all the adult health services.

The American Standards Association, through its Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases, is coöperating with the Division of Industrial Hygiene of the National Institute of Health in the preparation of technical standards for the prevention of industrial diseases. Codes have already been adopted and printed for benzol, hydrogen sulfide, carbon disulfide, and carbon monoxide. Work is actively under way on codes for many additional substances that are dangerous to health. The association also is engaged in the preparation of a wide variety of standards for use in the national defense program. The Standards Council has devised a method for quick action in developing emergency standards for defense purposes which will make it possible to turn out standards needed to speed along defense production as rapidly as is consistent with a good technical job.

The American Medical Association, through its Committee on Medical Preparedness, appointed in June, 1940, has made available every facility that the association can offer for the health and safety of the American people. A most important activity undertaken by the committee consisted of assembling a complete roster of the medical personnel of the United States and its possessions for the purpose of determining the number of physicians available for service in various capacities. To every physician who indicated active participation in industrial medical work, the committee sent an additional inquiry designed to acquaint the committee with the special qualifications which individual physicians possess and also certain details about industrial medical facilities which they command. It is of interest to note that this is the first time in the history of our country that an effort has been made to obtain this exceptionally useful information. In addition to the services conducted by the Association's committee on Medical Preparedness, the Council on Industrial Health of the Association has been active in carrying out its program of industrial health and is making a real contribution in this field. A joint committee of the Council on Industrial Health and the Subcommittee on Industrial Health and Medicine was formed last January to make recommendations to the Health and Medical Committee of the Federal Security Agency covering industrial hygiene needs of national defense.

The National Research Council, which was established in 1916 as the operating agency of the National Academy of Sciences, and was perpetuated at the end of the war in 1918 through an Executive order issued by President Wilson, is an important quasi governmental organization now permanently established to give advice to the government " on any subject of science or art."

The Council through its Division of Medical Sciences established during the summer of 1940 a number of advisory committees covering the fields of medicine, surgery, and information, as well as a number of technical subcommittees. The work of a number of these committees has a direct bearing on industrial medicine—the research project on the prevention of wound infection and the treatment of burns conducted by the Subcommittee on Surgical Infections; the projects dealing with all aspects of shock under investigation by the Subcommittee on Shock; the study of problems on aviation medicine conducted by the Committee on Aviation Medicine; the study of problems of neuropsychiatry to be carried on by a committee on neuropsychiatry now in the process of organization; and the investigations on fatigue, pressure studies, clothing for high and low temperatures, gas poisoning, and other subjects being conducted by appropriate committees and various

laboratories under the Subcommittee on Clinical Investigation serving as a clearing house for information are of particular interest to industrial medical groups. The appointment of the chairman of the Committee on Medical Research and Development of the National Research Council, as a member of the Health and Medical Committee has facilitated the correlation of these various committees with the general coördinating body. In a number of the projects carried on by the National Research Council, the facilities of the American Medical Association, the American College of Physicians, and of the American College of Surgeons are being used to advantage.

Of the associations representing the industrial hygiene engineering field which have been most active in the National Defense Program, the American Association of Industrial Hygienists, which meets annually with the American Association of Industrial Physicians and Surgeons, and the Industrial Hygiene Section of the American Public Health Association are representative. Many of the universities through their industrial engineering departments, and several independent agencies too numerous to comment on in the time at my disposal, are actively engaged in this field and are additional sources from which the nation can draw for assistance and advice. Included in the list of these independent agencies are those industrial organizations which, either through their own research laboratories or their financial support of other agencies, are carrying on a variety of investigations relevant to employee health.

The Industrial Hygiene Foundation of America, formerly known as the Air Hygiene Foundation, is one of the agencies supported by industry which is directing its efforts on problems of immediate practical importance in the national emergency. This organization also is providing funds for research projects assigned to other research laboratories.

The mobilization and the establishment of effective working relationships between these many independent organizations and governmental agencies are functions of the Subcommittee on Industrial Health and Medicine. The intelligent and aggressive manner with which the Subcommittee on Industrial Health and Medicine is pursuing its program may be expected to bring full employment of our industrial hygiene resources, and it is hoped that when the threat of war has passed and peace again comes to the world the objectives reached will become an integral part of a permanent procedure which can be applied to industry generally in the years that lie ahead.

Urgent Problems in Nutrition for National Betterment*

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THE problems in nutrition which are urgent today are not especially those of research in physiology and biochemistry—problems in these fields, although of the greatest fundamental importance, cannot be regarded as urgent in the face of conditions in the world today. Fortunately, we have enough information in these fields to be able to give with a fair degree of accuracy recommendations as to the daily allowances of the various dietary essentials for normal individuals. In this connection I especially want to call your attention to the recommendations recently proposed by the Committee on Food and Nutrition of the National Research Council (Table 1). These recommendations are the best obtainable today and should be used by everyone interested in calculating diets. Therefore, although there are many important problems still to be solved in determining the human requirements for various dietary essentials, we do have enough information for practical use in developing an adequate nutrition program.

There are many problems in the physiology and biochemistry of nutrition which are highly important. We need the answers to such questions as the rôle of deficiencies in resistance to infectious disease—What is the relation between vitamins and hormones? What are the specific enzyme systems in which the various vitamins participate? What metabolites are involved? Do we know all of the vitamins? Many other similar problems of equal importance could be listed, but the problems that I regard as really urgent lie in the field of *application* of the fundamental knowledge we now possess.

Now as never before we are awakening to the fundamental importance of adequate nutrition in maintaining health. All health officials must realize that today no health program can be complete unless it includes a consideration of nutrition, and one of the most urgent problems in nutrition is how to get every health department in this country to include nutrition as an important part of its activities. A few years ago we complacently thought that there was little of the deficiency diseases in the United States because our death reports revealed few deaths from these diseases. One of our big unanswered questions today is how much deficiency disease exists in this country. We still are unable to say with certainty, because deficiency diseases usually are not reported, the death rate is very low, and the diagnosis is often uncertain.

Another of our important problems

* Read before the Food and Nutrition Section of the American Public Health Association at the Seventieth Annual Meeting in Atlantic City, N. J., October 15, 1941.

TABLE 1

RECOMMENDED DAILY ALLOWANCES FOR SPECIFIC NUTRIENTS *

Committee on Foods and Nutrition, National Research Council

	Calories	*Protein grams*	*Calcium grams*	*Iron mg.*	*Vitamin A*** *I.U.*	*Thiamin (B_1) mg.***	*Riboflavin mg.*	*Nicotinic Acid mg.*	*Ascorbic Acid mg.***	*Vitamin D I.U.*
Man (70 Kg.)										
Moderately active	3000	70	0.8	12	5000	1.8	2.7	18	75	‡‡‡
Very active	4500	..	...	..	....	2.3	3.3	23	..	
Sedentary	2500	..	...	..	....	1.5	2.2	15	..	
Woman (56 Kg.)										
Moderately active	2500	60	0.8	12	5000	1.5	2.2	15	70	‡‡‡
Very active	3000	..	...	..	....	1.8	2.7	18	..	
Sedentary	2100	..	...	..	....	1.2	1.8	12	..	
Pregnancy (latter half)	2500	85	1.5	15	6000	1.8	2.5	18	100	400–800
Lactation	3000	100	2.0	15	8000	2.3	3.0	23	150	400–800
Children up to 12 years:										
Under 1 year ‡	100/Kg.	3–4/Kg.	1.0	6	1500	0.4	0.6	4	30	400–800
1– 3 years ‡‡	1200	40	1.0	7	2000	0.6	0.9	6	35	‡‡‡
4– 6 years	1600	50	1.0	8	2500	0.8	1.2	8	50	
7– 9 years	2000	60	1.0	10	3500	1.0	1.5	10	60	
10–12 years	2500	70	1.0	12	4500	1.2	1.8	12	75	
Children over 12 years:										
Girls, 13–15 years	2800	80	1.3	15	5000	1.4	2.0	14	80	‡‡‡
16–20 years	2400	75	1.0	15	5000	1.2	1.8	12	80	
Boys, 13–15 years	3200	85	1.4	15	5000	1.6	2.4	16	90	‡‡‡
16–20 years	3800	100	1.4	15	6000	2.0	3.0	20	100	

* Tentative goal toward which to aim in planning practical dietaries; can be met by a good diet of natural foods. Such a diet will also provide other minerals and vitamins, the requirements for which are less well known.

** 1 mg. thiamin equals 333 I.U.; 1 mg. ascorbic acid equals 20 I.U.

*** Requirements may be less if provided as vitamin A; greater if provided chiefly as the pro-vitamin carotene.

‡ Needs of infants increase from month to month. The amounts given are for approximately 6–8 months. The amounts of protein and calcium needed are less if derived from breast milk.

‡‡ Allowances are based on needs for the middle year in each group, (as 2, 5, 8, etc.) and for moderate activity.

‡‡‡ Vitamin D is undoubtedly necessary for older children and adults. When not available from sunshine, it should be provided probably up to the minimum amounts recommended for infants.

is how can we diagnose early deficiency disease. Although we do not know how many cases of the deficiency diseases we have, we do know from the number of cases seen by such clinicians as Wilder, Sydenstricker, Jolliffe, Spies, and others that these cases are very common. Fortunately, we have in addition the extensive dietary surveys of Stiebeling and her associates which show that a large proportion of our population, at least one-third or more, get diets which do not come up to the accepted standards of adequacy in one or more of the dietary essentials. Furthermore, as more and more clinical studies are being conducted, we are learning that deficient diets—short of producing the symptoms of a full blown deficiency disease—may be responsible for such vague symptoms as mental depression, indigestion, easy fatigue, loss of weight, retarded learning ability, and interference with vision. We need more information in order to clarify fully the importance of such symptoms. However, with the information already at hand we can no longer ignore in our health programs conditions which may be affecting such a large proportion of our population. A few years ago Surgeon General Parran said, "Food will build a new America," and food *can* build a new America if we will let it. With the development of nutritional science so rapidly unfolding year by year, we can be absolutely certain that intelligent and widespread use of that knowledge cannot fail to build a new America.

NUTRITION IN THE ARMED FORCES

In a world at war or preparing for war, the problems of greatest urgency are those affecting the armed forces, and first of all come those problems concerned with the actual feeding of the men under arms. The health officer is not directly concerned with those problems. They are recognized and are receiving adequate consideration by the military forces themselves. I believe that our military men will be as well fed as present-day nutritional science can feed them.

The problem of next importance is that of the physical condition of prospective candidates for military service. You have, no doubt, read the distressing accounts of the large number of young men being rejected for military service. General Hershey stated at the National Nutrition Conference in May that out of a million men examined by Selective Service and about 560,000 examined by the Army, a total of 380,000 were found unfit for general military service, according to present standards. This is approximately 24 per cent. He also stated that it had been estimated that perhaps one-third of the rejections were due either directly or indirectly to nutritional deficiencies. These shocking findings are a reflection of our failure to give adequate attention to nutrition in our health programs.

The *Chicago Times* recently (August 12, 1941) published an analysis of the number of draft rejections in Chicago by wards. This analysis showed that the percentage of rejections varied from a low of 39.9 per cent in the nineteenth ward to a high of 71.1 per cent in the eleventh ward. I know that you will not be surprised when I tell you that the eleventh ward with its 71.1 per cent of rejections is considered to be one of the poorest wards in the city, while the nineteenth ward with its 39.9 per cent of rejections is a well-to-do section of the city. We must recognize that many factors have resulted in this great difference. However, when it is remembered that there is a close association between low income and deficient diets, how can there be doubt that poor nutrition played a part in producing its share of those 71.1 per cent of rejections. With such a situation existing, and there is no reason to believe that

the situation in Chicago is essentially different from that in any other large American city, the two most urgent problems are obvious. First, how many of these rejectees can we rehabilitate by proper nutrition now and what is necessary to bring this about? Second, what can we do toward preventing the development of these defects due to poor nutrition in our children?

We know now that an adequate diet is just as important in terms of human health as adequate housing, adequate sewage disposal, or adequate prevention of communicable disease. We who are in public health work are not in a position to see to it that people get or eat the right foods. We are, however, in an especially advantageous position to emphasize the value of such a program to health and to teach the great importance of these things in the maintenance of health. If we fail to do so, we will be guilty of ignoring one of the surest roads to real public health.

NUTRITION IN INDUSTRY AND AT HOME

The next most urgent problems in nutrition after those affecting the military forces are those affecting the workers in defense industries. These workers constitute our second line of defense and more is demanded of them than ever before. We know that the need for thiamin increases with increased strain and activity, and here we have thousands of workers under greater strain and activity than they have had for years, with no organized effort to improve their food supply. In addition many thousands of them have been moved from their homes into sections not prepared either to house or to feed them properly. Instead of improving their nutritive status, it undoubtedly has become worse in many instances. We find that industrial medical services have paid little or no attention to nutrition, although the time lost by workers from occupational diseases is inconsequential compared to the time lost from non-occupational diseases. We need to know how prevalent inadequate diets are among industrial workers, and we need to show plant managers that adequate nutrition means a more efficient, healthier, satisfied worker. Part of our industrial hygiene program, which now largely ignores nutrition, should include a study of the eating habits of the workers and recommend, where indicated, the establishment of plant dining rooms and the serving of an adequate meal at minimum cost. These constitute large problems which urgently need solving.

Finally, we come to problems of nutrition affecting the entire population. As health officials we must build for the future with a continuing program. Although military and defense problems are most urgent today, in time these men will again fit into the larger picture of our entire civil life, but now they must be sustained by a civil population of high morale and good health. The Secretary of Agriculture recently said "Food will win the war and write the peace." With these two goals ahead of us, the problems of better national nutrition become problems that we *must* solve. An understanding of this fact by farmers, government, science, and industry is, as a matter of fact, one of the first of these problems. We must realize that in the United States we are not faced with the problem of having to decide between "guns and butter." We must realize that if the United States is to bring its full weight to bear in ending the present conflict, we must supply for our country and for the other democracies both guns and butter. We must place food on a parity with guns because our food is as urgently needed by England as our planes and tanks. And when we look forward to the day when the shattered nations of Europe gather round a barren peace table, then we will see the truth

of the slogan that food will not only "win the war" but will aso "write the peace."

PRODUCTION

Our great problem is to produce and to begin to produce now enough of the protective foods to meet these enormous demands. No matter how badly you need them, nothing can shorten the number of days it takes to produce a cow, a pig, or a chicken, and the time to start is now. Production is the great nutritional problem for American agriculture, and Secretary Wickard wants to make dairy products, livestock, and vegetables basic crops, as important in the nation's economy as cotton, tobacco, or wheat. He wants to build up food stocks which the rest of the world can use after the war. If we do produce these basic protective foods, there is no question but that ways and means will be found to distribute them.

DISTRIBUTION

This brings me to the biggest and toughest problem blocking the way to better national nutrition. This is the problem of distribution—of getting the food the people need to the people who need it most. This is another nutritional problem which is outside the province of the scientist and the health officer. Nevertheless, it is one which must be appreciated by anyone attempting to solve our national nutrition problems, and we must all throw our support to the agencies attempting to solve this problem. We already have the food stamp plan, the hot school lunch program, penny milk distribution, and various other channels of food distribution to those who cannot afford the foods they need. Other ways and means inevitably will be devised to distribute foods once the appetite and demand for them has been established. But regardless of these enormous economic problems which are so basic to the solution of the problem of malnutrition in America, we must continue, each in his own field, to contribute to the solution of those phases of the problem which we are especially qualified to attack.

TEACHING WHAT TO EAT

One of the great practical problems with which you especially must be concerned is the difficulty of educating Americans to the difference between good and bad food habits. This problem has been valiantly and constantly attacked by several government agencies over a period of years. Today it is being attacked with a barrage of educational material without parallel in nutritional history, but we need your assistance also. Nutrition education should be a large and important part of every health education campaign. If your health department is not doing nutrition educational work, your health program is not complete. The problem of nutrition education is still a long way from solution. The American people still eat and cook the way they like to eat and cook, regardless of the deficiencies in their diet or the vitamins they cook away and pour down the drain. In recent years the public has obtained a large part of its nutrition education from commercial advertising, much of which has been misleading or incorrect, a condition which many health and medical men have deplored. It has become obvious since the National Nutrition Conference that the great food industries in the United States can be a powerful ally in the solution of our nutrition education problems. Up to the present, and no one can blame them, these food industries have spent millions of dollars annually to sell their products on the basis of attractiveness and taste appeal. But now, with increasing public recognition of the importance of a well balanced diet, these industries are beginning to revaluate their products—to stress the fact that they are rich in proteins, or minerals, or vitamins, and

they are eager to have their advertising material technically correct. The question of how to coördinate and take advantage of the immense potentialities in this new attitude of the food industries is also a problem, but it is one which promises much when it is solved. The coöperation between science, government, and industry which was held up as a desirable goal at the National Nutrition Conference is daily coming closer to actuality.

One of the most valuable and successful activities has been the voluntary enrichment of white bread and flour by the baking and milling industries. This single step voluntarily taken by the bakers and millers, and publicly endorsed by the government agencies concerned, has not only made available significant quantities of thiamin, nicotinic acid, and iron in a basic and universal food item at minimum cost, but has also started a trend in food advertising and nutrition education that cannot fail to educate the American public to the values of truly "protective" foods. Furthering the distribution of enriched flour and bread in your community is not only an educational measure but also will materially help in the prevention of deficiencies in thiamin, nicotinic acid, and iron.

This problem of nutrition education then is one in which the health department should be vitally interested. I want to call your attention, however, to the necessity for coöperation in this field. There are many agencies interested in nutrition education. If your health department has neglected this field, you will probably find that other agencies have been trying to do both their job and your job too. State nutrition committees have now been organized in every state and we hope to see them become part of the state defense councils, and we hope soon to see more community nutrition committees in operation. You have a part to play in a larger program; let me urge you to contact your state nutrition committee, coöperate with your committee members, and make your program part of their plan if you have not already done so. The federal government can coördinate the program at the national level; it is up to you to bring about coördination and coöperation at the state and local levels.

In the field of public health, our duty is clear and well defined. We must accept the fact that malnutrition is one of the major causes of ill health and poor growth and development, and is one of the most important of the health officer's problems. We must realize that the problem of getting an adequate diet to the people is just as urgent a problem as keeping infection away from the people—that nutrition is truly the armour of robust health. With this conviction the public health workers in the United States can and will be where they should be—in the very forefront of the fight to vanquish malnutrition for America—which is the greatest problem of national nutrition.

Water Demands and Sewage Production in Military Cantonments

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THE design of water and sewerage works for a military cantonment, while involving the same basic engineering problems as are found in the design of municipal works, differs from the latter in the emphasis and relative importance placed upon various design features. Thus, where permanence and long life are given great weight in the design of municipal works, these factors may be of secondary importance for a military cantonment. Economic factors influence design in both cases but the emphasis is different; with a municipal works we are concerned with a business enterprise where operating costs are of primary importance, whereas with a cantonment, which may be used for only a few years, economy in construction is likely to be of greater importance than economy in operation. Moreover, reliable water consumption data to guide the engineer in the design of municipal water and sewerage works are available for most cities and towns, but such data for military cantonments are not so readily available. This paper presents a discussion of the allowances used in the design of water and sewerage facilities at Camp Edwards in Massachusetts together with records covering the operation of these works for the past eight months.

The wholesale construction of military cantonments under the present National Defense program began a little more than a year ago. In August, 1940, it was known that Camp Edwards, formerly a National Guard training camp situated on Cape Cod in Massachusetts, was to be leased from the state as a site for a military cantonment designed to house some 30,000 troops. In anticipation of this action the Massachusetts Department of Public Health undertook certain preliminary studies looking toward the expansion of the water supply and sewerage works to meet the needs of the proposed new cantonment.

It may be of interest to compare the water consumption allowances used by the Health Department in these preliminary studies with those used later, when the design of the new works was undertaken under the direction of the Construction Division, Office of the Quartermaster General. The Health Department based its consumption allowance on that used in the design of many of the army cantonments in 1917; namely, an average consumption of 55 g.c.d. (gallons per capita daily). While it was known that some of the World War cantonments suffered occasional

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* Read before the New Jersey Section of the American Water Works Association and the Engineering Section of the American Public Health Association at the Seventieth Annual Meeting in Atlantic City, N. J., October 16, 1941.

water shortages, it was felt that the replacement of horses and army mules with mechanized equipment would reduce rather than increase the water requirements. It should be said that this preliminary work by the Health Department, in which the author assisted, was undertaken with practically no knowledge of the plans and details of the proposed cantonment.

Design and construction of the new camp started a few weeks later under the Construction Division, O.Q.M.G. One of the first considerations in the design of the water supply and sewerage works was an early decision on the unit allowance for water consumption. Information on this point was sought from Washington and instructions were received to base the design of water works on an average consumption of 100 g.c.d. and a maximum domestic rate of at least twice this amount. Thus, in spite of the replacement of horses and mules with mechanized equipment, water consumption allowances had increased nearly 100 per cent over those used in 1917. No doubt a part of this increase can be attributed to the experience of World War days when camp populations increased considerably above the design figures. This, together with the fact that plumbing facilities in the new cantonments were to be more in keeping with present-day standards of living, would appear to explain the increased allowance. It will be shown from the operation records at Camp Edwards that the new consumption values adopted are not excessive.

Both the water supply works and the sewage disposal plant at Camp Edwards were designed on the basis of an average water consumption of 100 g.c.d. and a maximum consumption of twice this amount. It was not until after the design had reached its final stages, however, that standard basic data on the design of exterior utilities, in the form of a nomograph prepared by the Construction Division, O.Q.M.G., became available. These standards suggested that designs be based on (a) an average water consumption of 100 g.c.d., (b) a peak water consumption for the design of pipe lines of 250 g.c.d. and (c) for the design of sewers, a peak flow of 70 g.c.d. over an 8 hour period.

For the design of sewage treatment works reference is here made to a report to the Construction Division, O.Q.M.G. submitted in December, 1940, by the engineering firms of Greeley & Hanson and Metcalf & Eddy. While this report was not available until construction of the sewage treatment works at Camp Edwards was nearing completion, the following section dealing with sewage quantities may be of interest:

> The average quantity of sewage at camps and cantonments is estimated by the Construction Division to be 70 gal. per capita per 24 hours. This, in our opinion, is a reasonable quantity of sewage, perhaps high rather than low. Although most of the 70 gallons may be discharged during 16 hours, all rates are expressed on the 24 hour basis. The fact that most of the sewage flow may occur within 16 hours has been taken into consideration in the establishment of liberal detention periods based on a 24 hour average flow.
>
> It is known that there will be sharp deviations in the rate of flow. . . . We recommend that sewage treatment projects be designed to provide for a maximum quantity of sewage, lasting for several hours of twice the average quantity, or at a rate of 140 g.c.d. Hydraulics of treatment plants and other affected parts of the design should provide maximum quantities, lasting for an hour or less, of 2.5 to 3.0 times the average, depending upon the size and arrangement of the camp and the steepness of the sewers.

The water supply at Camp Edwards is from four new 90 ft. gravel-wall wells and from some 35 small driven wells constructed in 1936 under the National Guard. The latter wells are now held in reserve for emergency use only. Four pumps drawing from the new wells have a total rated capacity of 4.9 m.g.d. However, under present conditions the pumping heads are less than were pro-

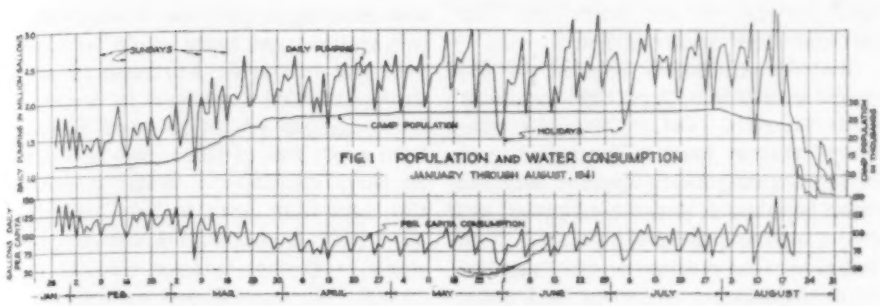

FIG. 1 POPULATION AND WATER CONSUMPTION
JANUARY THROUGH AUGUST, 1941

vided for in the design and these pumps are now capable of delivering water at a total rate of about 6.5 m.g.d. Storage is provided by four elevated steel tanks having a total capacity of 1.2 million gallons. The water distribution system consists of some 32 miles of cast iron mains ranging from 4″ to 14″ in diameter, and 15 miles of 2½″ and 1½″ service connections.

The sewerage system, including building connections, consists of about 40 miles of 6″ to 18″ sewers, all of vitrified tile except about 2 miles of cement-asbestos pipe and about ¼ mile of cast iron. Except in one pumping district, sewage flows by gravity to a 24″ outfall sewer, about ½ mile in length and thence to a sewage treatment plant. All lateral sewers in regimental areas were designed to handle a maximum flow of 400 g.c.d. while main sewers on the lower part of the system were designed for a maximum flow of 300 g.c.d. The 24″ outfall sewer, which was previously constructed under the National Guard, has a capacity of 230 g.c.d. when surcharged to the invert of the lowest entering sewer. These rates appear to be rather high, but they are actually lower than would have been used had certain official military advices been followed without considerable discussion. The rates are based on a population of 30,000, and in the design of both sewers and water mains a 50 per cent increase in population was always considered a possibility.

The sewage treatment plant consists of a comminutor, a grease-skimming flocculation tank, Imhoff tanks, biofilters, and final settling tanks. The disposal of the final tank effluent is by percolation into natural deposits of sand and gravel through 12 acres of intermittent sand filters; this being the only feasible method of final disposal for this locality. The sewage treatment plant is designed for a population of 30,000, an average flow of 3.0 m.g.d. and a maximum flow of 6.0 m.g.d.

Metering equipment was provided in both the water supply and the sewage treatment works. At each of the four new wells there are an orifice meter and an integrating flow recorder. Recording altitude gauges are provided near the elevated storage tanks which give a continuous record of the volume of water in storage. At the sewage treatment works there is a control section meter, similar to a Parshall flume, to measure and record sewage flows.

So few reliable data were available for the design of water and sewer lines serving unit regimental areas that recommendations were made for the installation of meters on the water lines in one or two such areas. At relatively small cost meter records would have given valuable information regarding peak rates of water consumption in small, thickly populated areas which would have been useful in laying out future cantonments. Unfortunately, official approval for the installation of

these meters was not given and thus far none have been installed.

Water consumption records for the camp as a whole have been available since January, 1941. The daily consumption from January through August is shown in Figure 1, together with the camp population, and the estimated per capita consumption. It is seen from this chart that during the early months, when the number of troops was under 15,000, the average consumption varied from 110 to 120 g.c.d. This rate gradually diminished as the camp population increased, with a minimum consumption of 80 g.c.d. being reached during one week in April when the camp population had risen to 26,000. Later, during June, July, and the first weeks of August, when the camp population varied between 27,000 and 28,000 the consumption increased to about 95 g.c.d., based on weekly consumption records, including Saturdays and Sundays but excluding holidays. During the third week in August there was a marked drop in the camp population and water consumption, as a result of extended maneuvers of the 26th Division at Fort Devens. During the last 5 days of August when the troop population was reduced to about 5,000, the average water consumption increased to 195 g.c.d. Actually, however, the number of persons using water during this period was in excess of 5,000. A certain amount of construction was being carried on which required water for both the workers and the construction operations. Furthermore, this 5 day period included a week-end with the usual influx of visitors. Thus, the actual per capita consumption during this period was probably somewhat less than the 195 g.c.d.

It is also seen from Figure 1 that the daily water consumption varies considerably during the week, falling off on Saturdays and Sundays when large numbers of troops are away on furlough, and reaching a peak on Fridays when preparations are being made for these week-end furloughs. Furthermore, prior to the extended maneuvers in August, a large number of troops were absent * from camp two or three days at a time on short maneuvers. Water consumption data from April to July, inclusive, when the camp population was relatively stable (varying between 26,000 and 28,000) are summarized as follows:

	Rate of Consumption	
	m.g.d.	*g.c.d.*
Average, excluding Saturdays, Sundays, and holidays	2.54	94.0
Average of maximum daily consumption each week	2.82	104.3
Average daily consumption during maximum 7 day week ending July 26	2.58	92.3
The same, but excluding Saturday and Sunday	2.71	97.0

As explained later, the daily sewage flows followed the same fluctuations as the water consumption, but were invariably lower except in rare instances when sewer manhole covers were removed illicitly to drain off surface water before adequate surface drains were available. During the month of July, 1941, the average water consumption was 2.50 m.g.d. and the average sewage production was 2.37 m.g.d.

Reliable data showing hourly water consumption rates are not available. However, sewage flows as recorded at the sewage treatment plant give an indication of the fluctuations in water consumption for the camp as a whole during the 24 hours of the day. The variation in sewage flow is illustrated in Figure 2 which has been prepared from the flow chart for June 20, 1941, when the total flow was 2.8 mil. gal. It is seen from this chart that a peak rate of 4.6 m.g.d. is reached at about 7 a.m. The flow then decreases to a rate of 2.3 m.g.d. at 11 a.m., rises to another peak following the noonday meal, and then falls off during the early afternoon. At

* The population figures shown in Figure 1 have not been corrected for these absences.

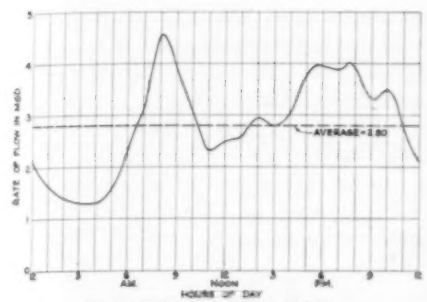

FIG. 2 SEWAGE FLOW CHART
FOR JUNE 20, 1941

3 p.m. the flow commences to rise, reaching a rate of 4 m.g.d. at about 7:30 p.m. The rate then falls off until 9 p.m., increases slightly until 10 p.m., and then recedes gradually until 3 a.m. when it reaches its minimum rate of 1.3 m.g.d. The peak sewage flows and the hours of their occurrence are influenced by storage in the sewerage system and the time of flow from the extreme ends of the system to the sewage treatment plant. For this reason the peak sewage-flow rates (Figure 2) are lower than the peak rates of water consumption and occur 1 to 1½ hours later.

The design of main sewers serving regimental areas was based upon certain assumptions regarding the effect of the rigid daily routine of troops upon sewage flows. Recalling the deficiency of factual data when the sewers were being designed, flow measurements were made in April, 1941, in two sewers, one serving a so-called regimental area having a troop population of 1,100, and the other serving the camp hospital area having a resident population of 1,570. Weirs were installed in sewer manholes and flow measurements were recorded periodically during 24 hours for each area. The flow measurements for the regimental area are shown in Figure 3 and those for the camp hospital in Figure 4.

Referring to Figure 3, the average sewage flow from the regimental area was 90.5 g.c.d.; the maximum flow, occurring at about 7:20 a.m. was 196 g.c.d.; the minimum flow, occurring between 3 and 4 a.m. was 51 g.c.d. From midnight until about 5 a.m. the flow was close to the minimum rate; between 5 and 6 a.m. the rate increased sharply, and beyond this point the fluctuations conformed well to the daily routine of the troops. In general, each mealtime was preceded and followed by a sharp rise in sewage flow.

Referring to Figure 4, the average flow from the camp hospital was 80.7 g.c.d.; the maximum rate of 148 g.c.d. occurred at about 9 a.m.; the minimum

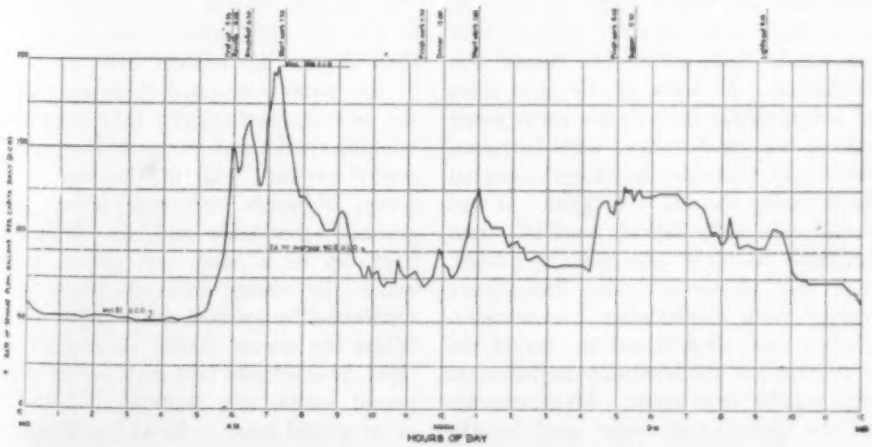

FIG. 3 VARIATION IN SEWAGE FLOW FOR TYPICAL REGIMENTAL AREA HAVING TROOP POPULATION OF 1100

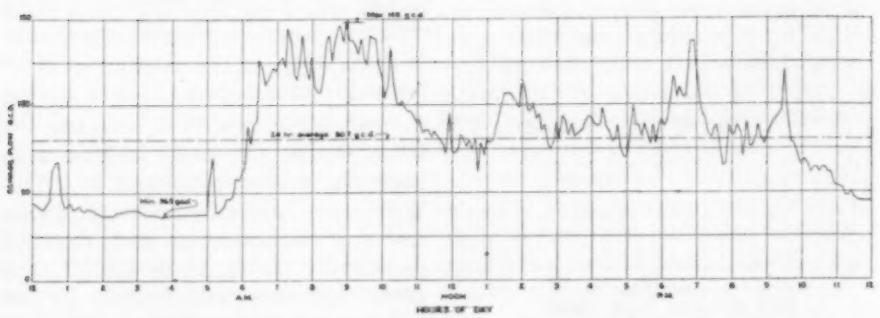

FIG. 4 VARIATION IN SEWAGE FLOW FOR HOSPITAL AREA HAVING RESIDENT POPULATION OF 1570

rate of 36.5 g.c.d. occurred between 3 and 4 a.m.

A comparison of Figures 3 and 4 shows a higher water consumption and sewage flow in the regimental area than in the camp hospital area. This is explained, in part at least, by differences in the operation of the plumbing fixtures. The barracks in all regimental areas have continuous-flushing trough urinals, whereas there are no such urinals in the hospital buildings. Last winter when troops began to arrive at the cantonment in force it was believed that water consumption rates were excessive. That this apparently high consumption was due to leakage in the distribution system seemed improbable. Following the laying of water mains each line was tested under pressure in accordance with standard practice and was made tight before the trench was backfilled. As soon as the high rates of consumption became known a waste survey was undertaken, with barracks, mess halls, and other buildings inspected both during the day and night. It was found that water faucets were left open in many barracks and other buildings, and that numerous toilet flushometer valves were discharging continuously. Orders were then issued to correct the condition and the necessary adjustments and repairs were made. Measurements of the quantity of water used by the trough-urinals showed an average consumption of approximately 2 gal. per minute per urinal.

Following this survey consideration was given to other methods of urinal flushing, and ultimately a decision was reached to change from continuous to intermittent flushing by the use of flushometer valves. Although this change has not been made as yet, it is probable that the new valves will permit a marked reduction in water consumption and sewage flow wherever the urinals are used.

Referring again to Figures 3 and 4, it should be recalled that the peak sewage flows are influenced by storage in the sewers. Peak rates of water consumption in these areas would be higher than the peak rates of sewage flow. The average rates of water consumption in the two areas also would be higher than the average sewage flows since all of the water consumed does not reach the sewers, particularly that used for washing trucks and for sprinkling newly seeded ground. All of the sewers at Camp Edwards are well above the ground water table and, for the most part, lie in a sand and gravel soil; hence, the sewage flows are practically unaffected by ground water infiltration. While the sewers should be reasonably tight, having been laid with sulfur compound joints, any leakage that might occur would tend to be outward rather than inward.

It is hoped that the water consumption and sewage production data presented in this paper will prove to be helpful to engineers and others concerned with the design of utilities for future cantonments. In using these data, however, it should be borne in mind that there may be important differences in water requirements even for cantonments of the same general character. For example, at Camp Edwards plans called for a post laundry at the time the water and sewerage systems were being designed, but the laundry was never built. Where cantonments have such laundries, water requirements and sewage flows will be measurably higher. Again, ground water conditions on Cape Cod are favorable to the construction and operation of sewers, whereas at other cantonment sites appreciable allowances may have to be made in the design of sewers and sewage treatment works for ground water infiltration. Camp Edwards is built on an almost level terrain, and elevated tank storage gives a relatively uniform static water pressure of approximately 60 lb. per sq. in. Where the terrain lends itself to other forms of storage, pressures may be higher or lower than this amount, either of which condition will affect water consumption rates. Water consumption may also be increased appreciably by refueling at air fields where the "Aqua" system of gasoline displacement is used. While this was not an important consideration at the Camp Edwards air field, the use of water for this purpose should not be overlooked where large numbers of planes must be refueled. The "Aqua" system used at two moderate sized military air fields in New England requires water for gasoline displacement at the rate of about 350,000 gal. in 4 hr., equivalent to a rate of 2.1 m.g.d.

Probably the most important consideration of all with regard to ultimate requirements of water and sewerage works is the possible expansion of a cantonment. No specific allowance was made for this factor at Camp Edwards, but an ultimate population of 45,000 troops was considered to be a reasonable possibility in view of 1917–1918 experience.

While, officially, no authority was given to provide for such a population this possible degree of expansion was not ignored either in the design of the water works or the sewerage system. The saving grace in the performance of many a municipal water or sewerage works has proved to be the factor of safety given by the allowances used for the future growth of the municipality, a factor of safety which the designer of similar works for an army cantonment cannot safely ignore.

The Relationship of Vocational Rehabilitation to Industrial Hygiene*

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I AM very glad to have this opportunity to express some of my personal views on the relationship of vocational rehabilitation to industrial hygiene. As one who has benefited from a federal-state program of vocational rehabilitation, I have good reason to feel that my discussion is not merely theoretical. You will understand that I speak as an individual and that my ideas on this subject are not to be taken as necessarily representing the official policy of the Wage and Hour Division.

SIZE OF THE PROBLEM

Despite preventive measures and methods of treatment devised in recent years, the number who become disabled each year from industrial and non-industrial injuries and disease is enormous. The Division of Vocational Rehabilitation of the U. S. Office of Education reports that 800,000 persons become permanently disabled every year because of congenital defects, accidental injury, and disease. Latest figures of the Bureau of Labor Statistics on industrial injuries in the United States indicate that in 1940 nearly 90,000 persons suffered some permanent impairment and 1,782,000 persons temporary disabilities. The total time lost from these injuries alone, according to the Bureau of Labor Statistics, was 125,240,000 man-days. The National Safety Council, in its 1941 edition of *Accident Facts*, reports that accidental injuries reached the staggering total of 9,100,000 in 1940.

METHODS OF TREATMENT

Without enumerating the economic costs resulting from this human waste, since it is obvious from the figures just quoted that the total cost would be astronomical, let us see what society has done to cope with this social problem. First, we have stressed preventive programs designed to reduce to a minimum health and safety hazards in industrial as well as non-industrial environments. I hardly need to tell you of the progress that has been made in this regard or stress the importance of prevention. Second, as evidenced by the many clinics and sanatoria for the medical treatment of injuries and diseases, we have recognized a social responsibility for making such services available to wage earners. Largely due to your interest in physical rehabilitation, many employers have recognized the value of an industrial medical and health program. Third, in our efforts to restore disabled workers to normal life, we have attempted, although on a very limited scale, to rehabilitate vocationally physically disabled workers and to restore their earning capacity. Of the three methods of treatment of this

* Read before the Industrial Hygiene Section of the American Public Health Association, at the Seventieth Annual Meeting in Atlantic City, N. J., October 17, 1941.

problem, vocational rehabilitation has attracted the least attention and its importance has been the least appreciated. Although vocational rehabilitation as a social responsibility has been accepted by all the states, the federal government, and private philanthropic agencies, only about 15,000 physically handicapped persons are vocationally rehabilitated annually by the federal-state program and some 15,000 by philanthropic organizations.

The task of restoring the injured worker to normal life naturally starts with providing him the necessary medical or surgical care. But it should not stop there. Frequently, such a worker may not be able to return to the labor market without undergoing a program of guidance and training designed to restore his former vocational efficiency, or to direct his interests toward other pursuits better adapted to his talents. The total task of rehabilitation is not completed until the patient is again economically self-supporting. Failure to recognize this may be wasteful. The emotional conflict which arises when the individual feels that only a life of dependency stares him in the face may undo the benefits of the medical attention he has received. Physical rehabilitation without vocational rehabilitation is simply unfinished business. And it is often a bad investment.

SALVAGING INDUSTRIAL MAN POWER

Recent increases in the demand for skilled labor, arising out of the defense program, have emphasized the need for action in salvaging much more of this human waste. Reports from England indicate a growing interest in rehabilitation in the Ministries of Labor and Health. Commenting on rehabilitation as a defense measure, the *London Economist* of November 2, 1940, has this to say:

> Rehabilitation has been defined as the process of reconditioning which will be required in certain cases after clinical treatment in order to obtain full restoration of working capacity. It means more than medical recovery; it involves not simply patching up of the injured person at home or at a clinic, but seeing that his ability to work is restored. Its importance is not simply humanitarian. It is economic; and the bringing back of disabled men and women into work with full output and full earnings was never more needed than at this stage of the present conflict of industrial man power.

In 1932, Roy Anderson undertook a study of the placements made by the Employment Center for the Handicapped in New York City. In his book, *The Disabled Man and His Vocational Adjustment*, published by the Institute for the Crippled and Disabled, Mr. Anderson used 4,404 cases of men with various orthopedic disabilities, all of whom were placed without being vocationally rehabilitated. This study revealed the tendency on the part of those who held jobs in the skilled and semi-skilled groups before disablement to drop down the scale into work of an unskilled nature. Specifically, 25 per cent had been skilled and 23 per cent had been semi-skilled workers before disablement. After disablement, only 6 per cent held skilled and 12 per cent semi-skilled jobs. This situation is wasteful of skill and training under any conditions; under present circumstances, with certain skills at a premium, it is tragic, not only from the viewpoint of the disabled worker but from that of the public interest. And the waste is increasing, for the Bureau of Labor Statistics reports that in each of three vital defense industries—machine tools, aircraft production, and shipbuilding—the number of disabling injuries per million hours worked increased by about 22 per cent in 1940 over 1939.

ECONOMIC AND SOCIAL BENEFITS OF VOCATIONAL REHABILITATION

Every successful effort toward vocational rehabilitation and placement of handicapped workers can be justified

on the basis of dollars and cents without recourse to sentimentality. The cost of supporting a disabled adult in idleness is generally estimated to be upward of $500 a year, whereas a single expenditure averaging $300 or less could have made him self-supporting. Thus, besides eliminating the high cost of institutional and private care, the vocational rehabilitation of the handicapped would add millions of dollars to the national income. The Division of Vocational Rehabilitation of the U. S. Office of Education, which coöperates with all of the State Vocational Rehabilitation Bureaus, estimates on the basis of experience over the last 20 years that the average earnings of a disabled worker after rehabilitation is about $1,000 a year. Multiply this figure by 150,000 (the number rehabilitated by the federal-state program since 1920) and the combined earnings of such workers represent an annual income of about $150,000,000. And while adding $150,000,000 to the nation's income, we have saved $75,000,000 which otherwise would have been spent for the care of these people.

Various studies have indicated the wide variety of useful occupations in which disabled workers may be trained advantageously. One made by the Division of Vocational Rehabilitation lists 628 different types of jobs held by physically handicapped persons. Because of the scientific treatment of the training and placement problems of the handicapped worker, it is not surprising to find that he is often more successful than the able-bodied. He is trained and placed in a job where he is happy and where his disability will interfere least with the performance of the duties required.

VOCATIONAL REHABILITATION AS A PART OF THE INDUSTRIAL HEALTH PROGRAM

At the Special Conference of State and Territorial Health Officers with the U. S. Public Health Service on September 16, 1940, Dr. Paul A. Neal of the Division of Industrial Hygiene, National Institute of Health, outlined a specific program of industrial hygiene in which he listed also the necessity for a "determination of methods for the absorption of handicapped persons into vital industries for national defense." Although Dr. Neal did not indicate how this would be accomplished, it is obvious that, in order to qualify, many of these workers will have to be vocationally rehabilitated. One of the ways this may be done is to include vocational rehabilitation as part of an industrial health program. Since many employers already have acknowledged their interest and responsibility in physical rehabilitation, and since physical rehabilitation without vocational rehabilitation is unfinished business, it follows logically that such employers should wish to participate in the vocational rehabilitation of their disabled workers as a part of their medical and health programs.

Because of the medical and work records it accumulates, an industrial medical unit would appear to be in an excellent position to plan and effectuate the training and placement of physically handicapped workers. A survey of each job in the establishment would determine, among other things, the physical requirements of each job. Such data, together with the medical diagnosis and prognosis and an appraisal of the worker's abilities, capacities, interests, and occupational history, would serve as a basis for charting the program. Possibly one of the best advantages of such a program in industry is that the resulting coöperation between the medical and personnel units would facilitate the training and placement of disabled workers with the least possible delay. This in turn would reduce the conflict which so often disorganizes the personality and would assure success in the total task of restoring the individual to

his independent place in society. Such a program would certainly eliminate to a large degree the fear of dependency and insecurity that is in the minds not merely of the handicapped but of all workers.

An employer primarily interested in the efficient operation of his plant surely should want to know something about the general performance of handicapped workers and what to expect so far as accidents are concerned. Fortunately, there is a considerable body of data to satisfy any employer's interest. The actual performance of such workers as compared to non-handicapped employees has been shown to be very favorable. In 1932, the Western Electric Company of Kearny, N. J., made a comparison of about 652 disabled workers with a similar group of non-handicapped employees doing the same types of work. Resignations, absences due to sickness, and discharges for cause were found to be from 7 to 8 per cent higher among the non-handicapped than among the disabled, and there were 5.6 per cent fewer accidents among disabled workers.

Employers are frequently reluctant to employ handicapped workers because of the fear of having to pay a higher compensation rate. These fears have no basis. The initial compensation rate generally is fixed for the industry as a whole and the total cost is based on the number of employees, occupations, and pay roll. No information is generally required regarding the physical condition of the employees. The rate is later adjusted on the basis of the plant's experience. The claim that the experience must necessarily be poor if handicapped persons are employed has not been substantiated. The Ford Motor Company, as an example to show that the contrary is generally true, employs more than 10,000 physically handicapped workers and reports that it has the lowest compensation insurance rate in the automotive industry. Since in an industrial vocational rehabilitation program the placement and training of such workers would be based on the physical requirements of each job, the accident risk could be reduced to a minimum.

J. W. Dietz, author of the article entitled "An Experiment with Vocationally Handicapped Workers" which appeared in the February, 1932, issue of the *Personnel Journal*, made the following conclusion regarding the Western Electric Company's experiment:

> Based upon the data presented thus far in this paper, we are of the opinion that there is no real reason why people possessing certain vocational defects should not be employed by large industrial concerns. The results of our year's experience with vocationally handicapped workers were sufficiently satisfactory to make their acceptance a part of the standard practice of our Medical Department.
>
> Likewise, as a result of our experience gained in working with the vocationally handicapped employees, significant changes took place in our thinking regarding other phases of our rehabilitation problem.
>
> It occurred to us that we had not exercised the same care in providing an adequate placement and follow-up routine for employees who were impaired with sickness or injury while in the employ of the company.

A follow-up and placement program can be effectuated with the least possible cost and with the maximum advantage to employers and disabled workers alike. Although the services of a rehabilitation consultant would be valuable and justified in the larger establishments, a close coöperation between the medical and the personnel departments could obviate the appointment of rehabilitation specialists in most concerns that would establish and carry out this program. In either case, after a worker had been physically rehabilitated, the medical and work records would be available to the personnel interviewer in the guidance and placement of the worker. Essential to this program is the coöperation possible with private and public vocational rehabilitation agencies whose accumulated

knowledge and experience would be invaluable.

The Division of Industrial Hygiene of the National Institute of Health and the State Industrial Hygiene Agencies might well formulate a skeleton outline showing the place and functions of vocational rehabilitation in an industrial health program. Additional research could profitably be conducted as to methods and measures for meeting the particular needs of employers.

CONCLUSION

I am frequently asked, "If vocational rehabilitation is as practical as you say it is, why hasn't it been more widely appreciated?" There are many answers to that question. I have tried in my discussion of the relationship of vocational rehabilitation to industrial hygiene to give one answer. Perhaps the greatest handicap to progress has been that we have permitted our sentiment to run away with our reason. We have been inclined to overlook the fact that, once the physical disability has been treated, the central problem is that of restoring earning capacity so the handicapped persons may become self-supporting. Since the return of such a worker to the labor market should be the ultimate goal, we must recognize our work as unfinished when it stops short of that. We must show employers that it is to their economic advantage to complete the job. We must impress upon them the fact that they have developed equities in workers who become disabled, and, as in the case of a machine, they will profit when they repair the worker rather than discard him. If we succeed, we will have done much to make social and economic assets out of many present human liabilities.

The Public Health Engineer in the Emergency*

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HEALTH is at all times of major importance to the individual and to the nation of which he is a part. In the event of a national emergency, fitness, both physical and mental, becomes of paramount importance, because it is man power that determines the capacity of the nation to produce weapons of freedom and to use these weapons.

Health, from the personal or individual point of view, is a condition of well-being that determines capacity to work, to play, to be happy and useful. As the nation is made up of individuals, it is obviously true that in order to raise the standards of national health, we must promote individual physical and mental health.

Public health, though a comparatively new art, has passed through several well-marked phases of development. Public health is practical in its outlook. "The greatest good for the greatest number" is an axiom that cannot be lost sight of when determining the best use of public health funds and personnel.

At any particular period, the scope of the public health program is limited by the knowledge which has been made available concerning the prevention of disease and the promotion of health. In fact, it may be said that the real purpose of public health is to bridge the gap which exists between knowledge and practice, and so minimize the loss of productive lives and capacities.

Public health as we know it today developed as part of a general movement for social reform, the aim of which was to correct some of the unfortunate results of industrialization. The public health pioneers saw disease, poverty, and filth going hand in hand. The emergency they faced grew out of the industrial revolution when the new factory workers came to live in the industrial centers which sprang up and which were entirely lacking in sanitary facilities.

The public health reformers sought to lighten the burden that was crushing the people, through the institution of sanitary measures which they believed would prevent many of the prevalent diseases. Their chief error lay in the belief, universal at that time, that disease breeds in filth instead of being carried in filth. They did not appreciate the actual and potential dangers in the excretions and secretions of the human or animal body. Nevertheless, through their energetic efforts, much was accomplished.

Following upon the epoch making dis-

* Read before the Conference of Municipal Public Health Engineers, at Atlantic City, N. J., October 13, 1941, during the Seventieth Annual Meeting of the American Public Health Association.

coveries of Pasteur and his coworkers, attention was focused on the control of the communicable diseases. Spectacular progress has been made in the control of many of these, notably those which are spread chiefly by water, milk and food, and by insects. It has been with those communicable diseases, the spread of which is direct from man to man, that the results have in general been disappointing unless active immunization has been possible. Despite the progress which has been made, sickness remains as the major hazard for the masses of the people, including the industrial wage earners.

With the relative control of many of the major epidemic diseases, such epidemics have ceased to be the chief concern of public health. Attention has been gradually directed toward the improvement of health as distinct from the prevention of disease. This required the spread of health knowledge to the general public in such a manner as to bring about the practice of this knowledge by the people as an integral part of their everyday living.

In the enthusiasm for health education and the solution of the health problems of the individual, there was for a time, in many places at least, a tendency to discount the importance of environmental conditions as fundamental to all health work, and to overlook the need for making it reasonably possible for people to practise what they were being taught, through the provision of sanitary facilities.

It might be said that public health is interested in every phase of individual and national life because every phase has some influence on health. Undoubtedly, the greatest public health problem is poverty. Together with poverty, we find ignorance, undernutrition, high morbidity and mortality rates. It is not, however, our problem as public health workers to deal with poverty as such.

In making the decision as to where our responsibility lies, we must avoid falling into the error of thinking that just because we know how to do a certain thing, it is necessarily done. For many years, we have known that milk supplies can be made safe through inspection plus pasteurization. In spite of this, much raw milk is still being sold, and the supervision of many dairy farms and pasteurization plants is still inadequate.

Another error to be avoided is the presumption that because water supplies in most of the larger centers of population are now safeguarded, the same must be true of the smaller towns and rural areas.

The emphasis of the public health program will vary from area to area, depending upon such factors as population, climate, economic conditions, and so on. There is no one standard program which will best meet the needs of all areas. The general purpose is always the same: the prevention of preventable diseases and the improvement of physical and mental health, leading to increased years of health and happiness.

There are certain basic public health requirements, provision for which must be made in all areas at all times. It is the means for providing these services which will vary from place to place and from time to time. Everyone should have available for use safe water, safe milk, facilities for personal cleanliness and for the storage of perishable foods, to mention but a few items which come readily to mind.

With what I have said for a background, we come to face the present-day emergency. We find ourselves living in an armed camp either preparing for or actually engaged in a struggle to preserve everything which we believe makes life worth while.

Under such circumstances, we are challenged, as individual citizens and as

members of public health organizations, to make our most effective contribution toward the national effort to meet the emergency.

I need hardly remind this group that public health includes in its personnel men and women with various professional basic trainings. From each it is expected that he or she will bring to his or her public health duties a capacity to apply technical knowledge to the solution of public health problems. The public health engineer, by reason of his professional training in engineering, is the staff member who is expected to give leadership in the designing, construction, or operation of those facilities which come under the general heading of environmental aspects of disease prevention and health promotion.

The value of the public health engineer, or indeed of any member of the public health organization, lies not only in his professional ability but also in his capacity for and his willingness to become a member of a team which will work in harmony, having the public health as objective. I emphasize this latter point because at a time when the emergency gives rise to many problems of jurisdiction and other irritants, it requires more than a fair degree of the coöperative spirit to avoid friction and not to lose sight of the common objective.

The state of emergency has brought about many changes of public health significance, creating problems but, at the same time, offering opportunities to advance public health.

Shifts of population with the setting up of military camps and defense industries in new areas, or the sudden expansion of population in small centers cannot take place safely without the safeguards which public health, largely through public health engineering, has to offer.

The public health engineer—and I am using that term to include the sanitary engineer—does not approach his problems alone. He is associated with the bacteriologist and the epidemiologist, for example, in many matters, but, nevertheless, it is upon his shoulders that the major responsibility for environmental conditions must rest.

In the present emergency, public health engineering, as a part of public health, has to consider three major questions: (1) What shall be our attitude toward the maintenance and further development of public health departments? (2) How can we best provide the necessary services for the new defense industries? (3) How can we assist in the provision of essential services for the armed forces?

In most public health matters, a line cannot be drawn between the civil population and the military forces. You will recall how, in 1918 and 1919, influenza swept around the world, sparing neither armies nor neutral nations remote from the war zone.

To whatever extent preventable diseases are allowed to persist and to whatever extent we fail to raise health standards, to a corresponding degree we decrease our ability to meet the emergency.

Man power is, of necessity, the most important national resource available to us in our efforts to deal with the problems arising out of the emergency, from both the military and the civil points of view. Quality of man power depends upon the fitness of the individual, whether in the armed forces, the factory, the farm, or the home.

It is obvious then that not only must there be no slackening in the work of public health departments, but on the contrary, there must be a raising of standards and above all the extension of services to local areas which up to the present have not enjoyed the advantages of adequate public health services.

The effectiveness of a health depart-

ment depends upon two things: the quality of its staff and the adequacy of its budget. No health department can function properly unless it has the leadership, guidance, and services of a qualified public health engineer working in close coöperation with the medical officer of health.

I would say then that the first duty of the public health engineer in the emergency is to do his part as an individual public health worker and as a member of that specialty in public health to promote, develop, expand, and maintain public health engineering services in the official health department organizations.

I do not think that this point can be over-stressed. There is, undoubtedly, going to be serious difficulty in maintaining health department services. There is the natural danger that, under the circumstances, other things may seem to be of relatively more importance. Staff will be lost and difficult to replace. There may develop a tendency to reduce expenditures on public health in favor of what will appear to be more urgent needs.

The responsibility therefore falls upon all public health workers to interpret to the public and to the responsible authorities what the public health departments mean to the nation in the emergency.

It is from the civil population that the armed forces recruit their men; it is from the civil population that defense industries draw their staffs. Thus, it is the health conditions of the civil population which determine the quality of man power available to the armed forces and to industry.

It might be said in all truth that in order to safeguard the health of the armed forces, we must have well organized public health services throughout the whole country. The soldier, sailor, or airman does not stay put. He spends much of his spare time and all of his leave outside of the militarily controlled area. He eats and drinks in any and every sort of public eating place. Unless these resorts are safeguarded by the health departments, they obviously endanger not only the civil population but also the man in uniform, for the germs of disease do not hold the uniform in awe.

All this brings me to repeat what I said before, namely, that the emergency demands that we press forward in the organization of adequate public health services, particularly for the rural areas, and that we do our utmost to maintain and improve the efficiency of exisitng services.

A special problem for the public health engineer arises out of the setting up of large and small defense industrial plants in new and sometimes relatively remote areas.

The public health engineer should be consulted as to the selection of sites, and the proper time to consider the question is before the final selection is made. We all know of construction having been started, indeed sometimes finished, before consideration was given to the accessibility of adequate water supplies.

Military necessity may require, at times, the selection of a relatively unfavorable site from the public health point of view, and under such circumstances, the public health engineer must make the best of conditions.

The actual situation in defense industries varies a great deal from place to place. Some plants will be located in comparatively isolated areas with large staffs; in others, the staff will be relatively small. Some plants will be entirely new; others will be an expansion of existing work. The latter are more frequently located in cities or small towns.

Obviously, the public health engineer must be informed as to the nature of the plant, the number of employees,

and so forth, if his part of the planning is to meet the environmental health needs of the situation. Here and in other matters, secrecy is often essential, which means that all must learn to exercise control over their tongues when it happens that, through our work, certain information regarding defense industries comes into our possession.

The industrial defense plants have the same requirements as all other industrial plants with regard to water supplies, sewage disposal, facilities for personal cleanliness, lunchrooms, kitchens, and food storage, as well as adequate provision for lighting and ventilation, and, depending upon the nature of the industry, special protection in connection with dust, fumes, explosives, and so on.

In the isolated plants, sleeping and recreational accommodation may be required, and these for both sexes. In this particular, it is well to keep in mind the importance of the maintenance of morale in which environmental conditions play an outstanding part. If, for example, the plant is one which operates twenty-four hours a day, the fact must not be overlooked that the night workers require quiet sleeping quarters during the day.

Perhaps the most difficult health situation arises in the sudden expansion of an industry located in a small town which lacks satisfactory community sanitary facilities. In such cases, with regard to sanitation, the town itself with its inhabitants cannot be divorced from the plant with its employees. What is needed, under such circumstances, is a joint effort to secure safe and adequate sanitary facilities for both the town and the industry. Under these conditions, overcrowding in dwellings is a particularly difficult situation to meet promptly and satisfactorily, but to neglect doing so will almost surely give rise to an unhappy health situation.

The public health engineer, either as a member of the armed forces or acting in his civil capacity, should be consulted in the selection of new military camps and the expansion of existing camps.

The attitude of the responsible military authorities toward military training has changed a great deal. The old idea of "hardening" men through needless exposure to cold and wet is now in the discard. In its place has come at least a partial acceptance of the more modern views with regard to education and health.

Perhaps it is the development of mechanized warfare which has emphasized skills rather than strength. Mechanized warfare calls for long periods of training which means that the man, when trained, is particularly valuable and difficult to replace. Safeguarding the health of these men while in training and afterward is highly important to the army, the navy, and the air force.

I mention this change because it means that the public health engineer, in planning for a military camp today, does not merely consider accommodation for eating and sleeping. He must bear in mind that the modern military camp has to a considerable extent become a school which needs classrooms, laboratories, and practise rooms. This demands consideration of lighting, ventilation, and all the other special environmental needs of a school.

I should like to mention also the necessity of keeping in mind provision for expansion, because it seems as though military camps never attain their full growth. Having made adequate provision for the twenty thousand men who were to be accommodated, it is often found that thirty thousand are expected to move in shortly.

From what I have said, it is clear that the public health engineer has an important rôle to play in the emergency. His services are essential to the civil, industrial, and military populations, and this, in effect, means the whole population. The important point in all

this is to make certain that the public health engineering personnel is so distributed as to make the services of the engineer available where and when needed. If this is done, we may rest assured that the contribution of the public health engineer to defense will meet the needs, and will assure the country of the full advantages in public health which this important member of the public health organization can offer to his country in its emergency.

Results of Serologic Tests for Syphilis in Non-syphilitic Persons Inoculated with Malaria*

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THE influence of malaria in producing positive serologic tests for syphilis in patients not infected with this disease has been a controversial question for many years. This problem is of more than academic interest. There is a large malarial region in this country. Those states affected have a large Negro population among whom there is a high prevalence of syphilis. Here, as elsewhere, the diagnosis of syphilis has rested largely upon the serologic test. Therefore, if malaria may produce positive tests in persons who do not have syphilis, it is essential that we know this to prevent false diagnoses and unnecessary therapy.

REVIEW OF THE LITERATURE

Much has been written concerning the effect of malaria on the sero-diagnosis of syphilis. There is approximately equal division among these reports as to whether malaria actually has any effect. The literature, up to 1938, has been well reviewed by Hazen and his associates.[1] Only a few of the more important observations will be mentioned here.

Lloyd and Mitra [2] report on 85 cases of malaria in a hospital of Calcutta, 14 per cent of whom had presumably positive reactions for syphilis. They state that this falls within the expected syphilis rate of their hospital population and conclude, therefore, that there is little evidence that malaria causes nonspecific positive reactions when modern technics are used. Kolmer,[3] from his observations and experience, states that malaria has no influence upon serologic reactions, although mentioning that sera from any acute febrile disease may become more anti-complementary than usual. His belief is that errors in technic probably account for reported cases of nonspecificity. These statements were reaffirmed in a subsequent paper,[4] adding that "The occurrence of positive reactions in malaria is presumptive evidence of syphilis."

Saunders and Turner,[5] working with a population in which yaws was prevalent, malaria present, and syphilis rare, found that the percentage of positive reactions was no greater among malarial

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patients than among the general population. They did suggest, however, that acute malaria may act as a provocative agent in raising a low titer reagin to the complement-fixation threshold. Similarly, Canova [9] concluded from his observations that malaria merely reactivates an old syphilitic process and brings out latent and serologically negative syphilitic infections.

Fisher and Ginsberger,[6] Taussig and Orgel,[7] and Wilson and Levin [8] made contrary observations, namely, that malaria may produce nonspecific positive serologic results. Cumming and his coworkers,[10] in a study of 36 cases of presumably non-syphilitic patients with malaria, found a significant percentage of false positive reactions, varying from a low of 11.1 by Hinton to a high of 19.4 by Kolmer. Hazen and his associates reported 8 per cent positive reactions in a study of 266 presumably non-syphilitic white persons with malaria. Stryjecki [11] found in his study of patients with malaria, that 40 per cent gave a false positive reaction for syphilis, although this reaction was transitory.

Several aspects of the papers cited in the preceding review are to be particularly noted. First, and most important, is that none of these observations are really controlled studies, in that they were made either on routine hospital patients or patients in the field in whom syphilis could not be ruled out in all cases. Comparisons of rates were made with the general population. Most of the observations were made using a modified Wassermann technic at a time when the sensitivity of tests was not so high as it is today and the technics were not so well standardized. Finally, in none of the preceding studies were serial tests carried out on the same patient at intervals throughout the course of the infection. The conclusions were usually based on single specimens taken at varying periods in the course of the disease.

The first systematic and controlled study of this problem was made by Kitchen and his coworkers [12] who inoculated non-syphilitic patients suffering from functional psychoses with malaria, using similar patients not inoculated with malaria as controls. Using a complement-fixation and a Kahn test, they found that every case which developed malaria exhibited positive results at some time during the course of the infection. This formed the most conclusive evidence yet presented on the effect of malaria in producing a positive complement-fixation or flocculation test in non-syphilitic patients.

Our efforts have been directed toward further clarification of this apparently confusing problem. The primary purpose of this study was to determine the influence of malaria on the complement-fixation and flocculation tests for syphilis. Secondary considerations were: (a) influence of the stage of the disease, (b) to observe any differences in the several tests used, (c) to determine the effect of duration of the disease, (d) to learn if the number of malarial parasites in the blood or the temperature at the time of withdrawal had any effect on the results, and, finally, (e) to determine the period of maximum titer of the serum as demonstrated by the Kahn quantitative test.

METHODS

The laboratories of Eagle, Hinton, Kahn, Kline, and Kolmer kindly agreed to perform the tests bearing those names on all specimens collected in the course of this study. In addition, the Venereal Disease Research Laboratory of the U. S. Public Health Service, under the direction of Sr. Surgeon J. F. Mahoney, also participated, performing the Kahn, Kline, and Kolmer tests on all specimens.

Eleven patients with functional psychoses were inoculated with malaria. Syphilis was excluded by means of history physical examination, two negative

TABLE 1

Serologic Pre-testing Results

Type of Test	*Number Positive*	*Number Doubtful*	*Number Negative*
Eagle Wassermann	0	0	11
Eagle Microflocculation	0	0	11
Hinton	0	1	10
Kahn Standard (Kahn)	0	0	11
Kahn Standard (Mahoney)	0	0	11
Kline Diagnostic (Kline)	0	0	11
Kline Diagnostic (Mahoney)	0	0	11
Kolmer (Kolmer)	0	0	11
Kolmer (Mahoney)	0	1	10

One case had two doubtful reactions to the Hinton test and one case one doubtful reaction to the Kolmer (Mahoney) prior to inoculation. These cases, both of which had positive reactions during the malarial course, were not included in the figures for such tests.

blood serologic tests and one negative spinal fluid. All pre-inoculation specimens were submitted to the above serologists. In addition, 4 controls were selected, 2 with syphilis and 2 without.

Three patients were inoculated with 10 ml. of blood containing *Plasmodium vivax*. The other 8 patients were infected directly by the bite of an infected mosquito. The blood containing the parasites and the infected mosquitoes were obtained from Dr. Martin Young of the Public Health Service Malaria Laboratory at Columbia, S. C. The infected blood was obtained from functional psychotics with malaria who did not have syphilis as proved by negative history, physical examination, and blood and spinal fluid serologic reactions.

There is no evidence that the mosquito may transmit the spirochete of syphilis. Therefore, we can reasonably state that our patients were inoculated only with *Plasmodium vivax*. The only observed difference between the two methods of inoculation was the longer incubation period where the bite of the infected mosquito was used.

Enough blood was withdrawn from each patient to send a comparable amount to each laboratory in the form of whole blood. This was sent airmail to the participating serologists on the same day as withdrawn and under a code number. Besides the two pre-inoculation specimens, blood was collected once a week during the incubation period, every 4 days during the active stage of the malaria, and again once a week after termination of the disease by the use of quinine, until the serologic reaction became negative. Quinine was given when the patient had had 10 paroxysms. A total of 13 specimens

TABLE 2

Number of Persons Having Positive Reactions by Different Tests

Type of Test	*Number Positive*	*Number Doubtful*	*Number Negative*
Eagle Wassermann	5	1	5
Eagle Microflocculation	4	1	6
Hinton	0	3	7
Kahn Standard (Kahn)	11	0	0
Kahn Standard (Mahoney)	11	0	0
Kline Diagnostic (Kline)	11	0	0
Kline Diagnostic (Mahoney)	9	1	1
Kolmer (Kolmer)	7	0	4
Kolmer (Mahoney)	9	1	0

was obtained when some of the patients were at the height of a paroxysm. Parasite counts were made by the Malaria Laboratory of the U. S. Public Health Service at Savannah, Ga.

OBSERVATIONS AND DATA

Table 1 presents the serologic results before inoculation with malaria.

All cases had at least one positive reaction to the Kahn Standard (Kahn), the Kahn Standard (Mahoney), and the Kline Diagnostic (Kline), during or after the malarial attack. The number of persons having positive reactions to the other tests is shown in Table 2.

No positive or doubtful reactions were reported on the negative controls by any of these tests during this period. In cases that were positive, the positive reaction was never an isolated one. Invariably another positive or doubtful reaction was returned on the same case to that particular test. In none of these tests was there a single instance of a negative occurring between the first and last positive reactions, and in only one case (Kolmer-Mahoney) did a doubtful occur during this interval.

Table 3 presents the total positive reactions after inoculation with malaria.

The results of the various tests in the different stages of malarial activity are shown in Table 4. The febrile stage was delimited by the first and last elevations of temperature to 37.8° C. or 100.0° F. In this table a doubtful reaction was considered as positive if, at the beginning of the stage of positivity, it was followed by a positive blood, or if, at the end of the stage of positivity, it was preceded by a positive blood. One patient had a positive reaction to the blood withdrawn on the day on which first parasites were evident, which was the day before the first paroxysm. With this one exception, no positive reactions were observed prior to fever.

Although the percentage of positive reactions within each stage varied between different tests, in general they all showed the same tendency. During the first week of fever, it varied from 5 per cent in the Eagle Wassermann to 52 per cent in the Kahn Standard (Mahoney). Without exception the percentage of positive reactions in the second week of fever was higher than for the corresponding test for the first week of fever. Again the Eagle Wassermann had the lowest percentage (23) and the Kahn Standard (Mahoney) the highest (87). Only 3 patients had a fever of over 2 weeks' duration and only 4 samples of blood were withdrawn in the 3rd week of fever. The percentage of positive reactions declined after the termination of fever. Only 2 out of 20 samples of blood withdrawn more than 3 weeks after termination of fever were not nega-

TABLE 3

Total Number of Positive Serologic Reactions After Inoculation with Malaria

Type of Test	*Number Specimens Examined*	*Number Positive Reactions*
Eagle Wassermann	115	11
Eagle Microflocculation	116	16
Hinton	100	0
Kahn Standard (Kahn)	116	48
Kahn Standard (Mahoney)	125	51
Kline Diagnostic (Kline)	133	39
Kline Diagnostic (Mahoney)	125	27
Kolmer (Kolmer)	128	38
Kolmer (Mahoney)	111	38
Total	1,069	268

TABLE 4

Reactions of Various Tests for Syphilis in Eleven Non-syphilitic Persons Inoculated with Malaria by Stage of Malarial Activity

Type of Test	Blood Reaction	Before Inoculation	Pre-febrile Stage	Febrile Stage 1–7 days	Febrile Stage 8–14 days	Febrile Stage 15–21 days	Post Febrile Stage 1–7 days	Post Febrile Stage 8–14 days	Post Febrile Stage 15–21 days	Post Febrile Stage 22 days & over
Kahn Standard (Kahn)	Pos.	0	0	9	12	3	12	9	1	2
	Neg.	35	14	12	4	1	3	8	8	18
	% Pos.	0.0	0.0	42.9	75.0	75.0	80.0	52.9	11.1	10.0
Kahn Standard (Mahoney)	Pos.	0	1	11	13	4	12	8	1	1
	Neg.	21	10	10	2	0	3	9	8	32
	% Pos.	0.0	9.1	52.4	86.7	100.0	80.0	47.1	11.1	3.0
Kline Diagnostic (Kline)	Pos.	0	0	5	10	4	11	6	2	1
	Neg.	27	17	18	3	0	4	11	7	34
	% Pos.	0.0	0.0	21.7	76.9	100.0	73.3	35.3	22.2	2.9
Kline Diagnostic (Mahoney)	Pos.	0	1	4	9	3	7	5	1	0
	Neg.	21	11	16	6	1	8	11	8	34
	% Pos.	0.0	8.3	20.0	60.0	75.0	46.7	31.3	11.1	0.0
Eagle Wassermann (Eagle)	Pos.	0	0	1	3	2	5	0	0	0
	Neg.	29	13	18	10	2	10	16	9	26
	% Pos.	0.0	0.0	5.3	23.1	50.0	33.3	0.0	0.0	0.0
Eagle Microflocculation (Eagle)	Pos.	0	1	2	4	3	4	2	0	0
	Neg.	26	12	15	10	1	11	14	9	28
	% Pos.	0.0	7.7	11.8	28.5	75.0	26.7	12.5	0.0	0.0
Kolmer Complement-Fixation (Kolmer)	Pos.	0	0	3	5	4	8	6	0	0
	Neg.	32	17	15	7	0	7	11	9	36
	% Pos.	0.0	0.0	16.7	41.7	100.0	53.3	35.3	0.0	0.0
Kolmer Complement-Fixation (Mahoney)	Pos.	0	0	6	9	4	10	7	2	0
	Neg.	18	12	12	3	0	3	8	6	29
	% Pos.	0.0	0.0	33.3	75.0	100.0	76.9	46.7	25.0	0.0
Hinton (Hinton)	Pos.	0	0	0	0	..	0	0	0	0
	Neg.	22	14	13	9	..	12	13	8	31
	% Pos.	0.0	0.0	0.0	0.0	..	0.0	0.0	0.0	0.0

tive to the Kahn Standard (Kahn), 1 out of 33 to the Kahn Standard (Mahoney), 1 out of 35 to the Kline Diagnostic (Kline), and all other tests were negative.

The duration of positivity varied greatly between patients and between different tests applied to the same patient. In Table 5 a doubtful reaction was counted as positive if, at the be-

TABLE 5

Average Duration of Positivity of the Various Tests for Syphilis in Relation to Clinical Activity of Malaria

	Duration of Positivity in Days	Days from First Parasites to First Positive Blood	Days from Start of Quinine to Last Positive Blood
Kahn Standard (Kahn)	18–23	5– 7	9–14
Kahn Standard (Mahoney)	17–30	5– 7	8–15
Kline Diagnostic (Kline)	14–24	7– 9	8–15
Kline Diagnostic (Mahoney)	11–19	7–10	7–12
Eagle Wassermann	5–11	10–13	2– 6
Eagle Microflocculation	14–21	8–10	6–10
Kolmer (Kolmer)	12–20	7–10	6–11
Kolmer (Mahoney)	18–26	6– 8	10–15
Hinton (Hinton)	No Positives Reported		

The two sets of figures represent the minimum and maximum durations. One figure is based on the first and last recorded positive blood, the other on the last negative prior to the period of positivity, and the first negative after this period. The difference represents the time between tests in which the blood reaction is unknown.

ginning of the stage of positivity, it was followed by a positive blood or if, at the end of the stage of positivity, it was preceded by positive blood. Figures for the average known and possible durations of positivity for each type of test are given.

In Table 6 are the corresponding figures for the longest number of days of positivity. With the exception of the Kahn Standard (Mahoney) and Kolmer (Mahoney) on the same patient, no known duration of positivity extended over a period longer than 4 weeks.

The longest duration of febrile activity was 18 days and the shortest 7, with an average of 13 days. There was no apparent relationship between the duration of clinical activity and of positivity, nor was there any evidence that the longer duration of positivity was always associated with its onset early in the malarial stage. The only definite finding was that the patients with the longest durations of positivity remained positive for the longest periods after the administration of quinine. In Chart I the percentage of positive reactions to the Kahn Standard (Kahn) is plotted by time-period after appearance of parasites. It increases to the maximum of 88 in the 3rd week after the first parasites, and then declines, all cases being negative by the 7th week.

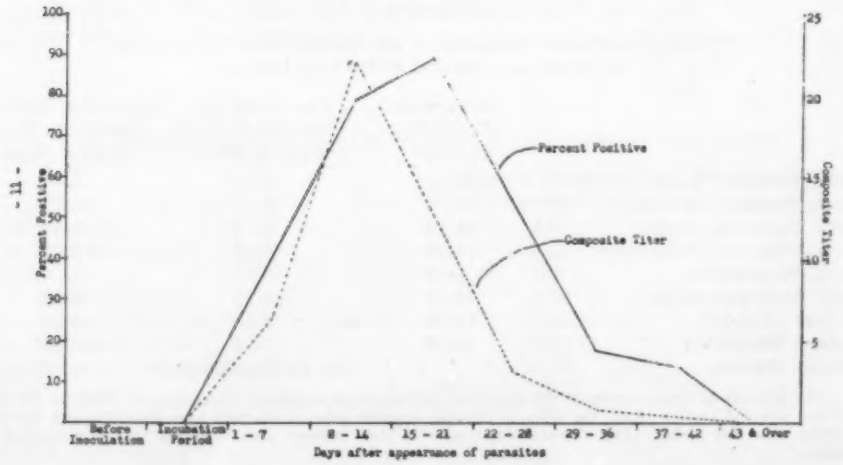
TABLE 6

Duration of Positivity

Name of Test	*Known Duration*	*Possible Duration*
Kahn Standard (Kahn)	27	40
Kahn Standard (Mahoney)	29	56
Kline Diagnostic (Kline)	27	51
Kline Diagnostic (Mahoney)	19	41
Eagle Wassermann (Eagle)	7	14
Eagle Microflocculation	20	32
Kolmer (Kolmer)	19	40
Kolmer (Mahoney)	36	44

CHART I

Percentage of Positive Reactions and Composite Titer of the Kahn Standard Test for Syphilis in Nonsyphilitic Persons Inoculated with Malaria by Time Period After Appearance of Parasites.



The height of the peak temperature could not be shown to influence either the duration of positivity or the number of technics giving a positive result. Three cases positive to all tests except the Hinton had peak temperatures of 105.4°, 105.0°, and 106.2° F. Four cases never positive to four tests each had peak temperatures of 105.6°, 106.2°, 105.0°, and 106.4° F.

Consideration was given to the time-period from inoculation to appearance of parasites and its possible relation to the positivity of the blood. It was found that the 3 cases with the longest intervals remained seropositive for longer than the average period. Conversely, the 3 cases with shortest time-period between inoculation and the appearance of parasites remained seropositive for less than the average period. It is seen in Table 5 that on the average the Eagle Wassermann had the longest duration from the first appearance of parasites to the first positive blood.

The reactions to the various tests were studied at the time most tests showed positive, that is, at the time of maximum positivity on the basis of all the tests.

In general, technics giving a positive reaction on a given case tended to do so at the same time. With the exception of the Eagle Wassermann, all the technics which were ever positive for a particular patient were positive simultaneously on at least one sample of blood. The number of days from the first appearance of parasites to maximum positivity of the blood on the basis of all tests varied from 7 to 24 days, with an average of 15. In 6 cases this maximum positivity occurred after the last paroxysm, and in 3 after the start of quinine. In one patient the period was 11 days and in another 12 days after start of quinine.

An analysis of the titer of the Kahn Standard test shows that the occurrence of the maximum titer varied from 4 to 20 days after the first appearance of parasites, with a mean of 11 days. In Chart I the composite titer is plotted against time elapsed after the first appearance of parasites. This composite, which was obtained by adding all titers for all tests made in a particular period, counting negatives as zero and dividing by the number of tests made, reaches a peak of 22 in the second week after the appearance of parasites. The highest individual titer observed was 120. In 8 out of 11 cases studied, the highest titer appeared within 2 weeks after the first appearance of parasites, and in 10 cases in either the first or second positive reaction recorded.

Of 13 samples of blood withdrawn at the peaks of paroxysms, one titer of 120, one of 4, one of 3, two of 2, and eight of 0 were obtained. The titer of 120 was on blood withdrawn in the second week of fever.

There was no demonstrable correla-

TABLE 7

Agreement Between Tests at Time Most Tests Were Positive

Type of Test	*Positive*	*Doubtful*	*Negative*	*Not Done*
Eagle Wassermann	4	1	3	3
Eagle Microflocculation	3	2	3	3
Hinton	0	0	6	4
Kahn Standard (Kahn)	11	0	0	0
Kahn Standard (Mahoney)	10	0	0	1
Kline Diagnostic (Kline)	11	0	0	0
Kline Diagnostic (Mahoney)	7	1	1	2
Kolmer (Kolmer)	8	0	3	0
Kolmer (Mahoney)	9	0	0	2

tion between the parasite count and positivity of the blood. Six of the 11 cases attained maximum positivity on the basis of all tests after the last paroxysm and 3 after the start of quinine. One case attained maximum positivity 11 days, another 12 days after start of quinine.

Spinal fluid tests were performed on 3 patients while some of the blood tests were positive. All results were negative with the exception of a doubtful Kahn Standard and a 3+ Kahn presumptive as performed by Kahn on one specimen. The globulin and colloidal gold were negative and the protein 28. The Hinton, Kline Diagnostic (Kline), Kline Exclusion (Kline), Kolmer (Kolmer), and Kolmer (Mahoney) were negative on the same sample of fluid.

DISCUSSION

There can be little doubt that malaria does exert a pronounced influence upon the specificity of the complement-fixation and flocculation tests. In this series of 11 dementia praecox patients inoculated with malaria, all gave false positive reactions by at least two different technics. The Hinton test was the only one which failed to give at least one positive reaction. This is difficult to understand in view of previous studies [10, 1] in which false positive reactions were obtained with the Hinton test in 11.1 and 4.4 per cent of patients with malaria.

Syphilis was excluded as a cause of the positive reactions in this study by the negative blood and spinal fluid serologic reactions, history, and physical examination before inoculation with malaria, and by the further fact that all patients became and remained seronegative after complete recovery from malaria. This is in contradiction to the claims of many previous authors who state where positive reactions were obtained in patients with malaria, there was concomitant syphilis. Their failure to detect this false positivity may have been due to a variety of reasons, chief among which were probably low sensitivity of the serologic tests and failure to take an adequate number of specimens over a sufficiently long period of time. Certainly, the agreement of these findings with those of Kitchen and his associates presents strong evidence that malaria does produce a positive complement-fixation and flocculation reaction in patients who do not have syphilis.

The public health significance of this observation is self-evident. There is a large area in this country in which malaria is endemic. If we are to prevent erroneous diagnoses in asymptomatic syphilis in this area, the influence of malaria on serologic tests must be considered in each individual patient. The observation that the reaction may be positive several weeks after the cessation of clinical malaria adds to the problem. Certainly a serologic test for syphilis in a patient with active malaria, or one who has had malaria within a period of 4 weeks, should not be used as a basis for diagnosis in the absence of history and physical findings of syphilis. Rather, one should wait until at least 4 weeks have elapsed since the termination of the malaria, and then repeat the serologic test at least twice before using this as a basis for the diagnosis of asymptomatic syphilis without history.

SUMMARY

Of 11 apparently non-syphilitic dementia praecox patients inoculated with malaria, all cases had at least one positive reaction to the Kahn Standard (Kahn), the Kahn Standard (Mahoney), and the Kline Diagnostic (Kline). Out of 11 cases, positives were returned on 9 according to the Kline Diagnostic (Mahoney); 1 case returned three doubtfuls; and 1 case was never positive or doubtful. Out of 10 cases, the Kolmer Complement-Fixation test (Mahoney) was positive on 9, and the other patient had one doubtful reaction.

However, out of 11 cases, only 7 were positive to the Kolmer Complement-Fixation (Kolmer), and 4 cases were never positive. Five cases were positive out of 11 according to the Eagle Wassermann, and of the 6 that were never positive, 1 had a doubtful reaction. Only 4 patients out of 11 tested according to the Eagle microflocculation test were positive, and 1 of the other 7 had two doubtful reactions. However, this result of 4 patients positive out of 11 is statistically significant when it is known that all 11 were negative before inoculation. None of the 10 patients were positive to the Hinton test (Hinton), but 3 of them showed one doubtful reaction. No positives or doubtfuls were returned on any of the negative controls by any of these tests during this period. It may also be remarked that in those cases which were positive, the positive test was never an isolated one. Invariably another positive or doubtful reaction was returned on the same patient.

In none of these tests is there a single instance of a negative occurring between the first and last positives, and in only 1 case does a doubtful occur during this interval.

The greatest proportion of positive reactions occurred 15 to 21 days after the onset of clinical activity. With the exception of the Kahn Standard (Mahoney) and the Kolmer test (Mahoney) on the same patient, in no patient did the positivity to any test extend over a period longer than 4 weeks.

The duration of clinical activity, highest temperature reached, time of withdrawal of blood in relation to an individual paroxysm, or density of parasites, did not demonstrably influence the serologic reactivity of the blood. Although there was some variation between the results of different technics on the same sample of blood, in general, the results were consistent.

It is the opinion of the authors that, from the evidence presented, a diagnosis of asymptomatic syphilis based upon positive serology alone should not be made in an area where malaria is endemic without first eliminating the possibility of coincident malarial infection.

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Complement-Fixation in Rickettsial Diseases*

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THE complement-fixation reaction has been found useful in the study of a number of bacterial diseases and, more recently, in certain virus diseases including influenza, psittacosis, equine encephalomyelitis, lymphocytic choriomeningitis, lymphogranuloma venereum, papilloma, vaccinia, and others.

Complement-fixation in rickettsial diseases has been investigated by comparatively few workers. Among the early publications was that of Davis and Petersen,[1] 1911, who studied complement-fixation in Rocky Mountain spotted fever, using as antigens the serum and the macerated organs of infected guinea pigs and also infected tick eggs. Alcoholic extracts of organs from fatal cases of European typhus were used as antigens by several workers including Cathoire,[2] Müller,[3] Markl,[4] Delba,[5] and Papamarku.[6] Papamarku[7] later used an extract of infected lice as did Jacobthal[8, 9] and Epstein.[10] None of these antigens yielded results which were very satisfactory. In all probability the number of rickettsiae in the infected organs was too small for the purpose of producing good antigen. Infected lice were unsuitable because similar results were obtained with both normal and with infected lice.

With the newer improved methods for the cultivation of rickettsiae it has been possible to obtain much more satisfactory antigens. This is particularly true of endemic typhus and "Q" fevers. Endemic typhus fever rickettsiae grow abundantly in the infected chick yolk sac (Cox[11]) in the lungs of mice and rats infected by the intranasal route (Castaneda[12]), and also by the agar-tissue culture method of Zinsser, Fitzpatrick, and Wei.[13] The rickettsiae of "Q" fever can be obtained in considerable concentration in the spleens of infected mice (Burnet and Freeman[14]), and in the infected yolk sac of chick embryos. It is a more difficult problem to obtain luxuriant growth of the rickettsiae of Rocky Mountain spotted fever and European typhus.

Castaneda,[15] 1936, obtained positive complement-fixation reactions in cases of active and past infection with Mexican typhus and Brill's disease, using rickettsiae from x-rayed typhus infected rats as antigen.

One of us has recently reported on complement-fixation in "Q" fever[16] and in endemic typhus.[17] Mouse spleens and infected yolk sacs were the source of the rickettsiae used for antigens in "Q" fever and infected rats' lungs and infected yolk sac were employed for the typhus antigens.

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In the complement-fixation reaction as well as in other laboratory procedures used for determining active or past infection an important consideration is that of specificity, and the work here reported has been undertaken to obtain added information on this point, particularly in regard to endemic typhus fever and its differentiation from Rocky Mountain spotted fever. The Weil-Felix test has proved very useful in the differentiation of certain of the rickettsial diseases from other diseases, but it does not differentiate between typhus and spotted fever. The neutralization test in guinea pigs also fails at times to yield conclusive results, owing to secondary infections and nonspecific immunity (Badger [18]). The question of differentiation is of special importance in those sections of the country where both endemic typhus and Rocky Mountain spotted fever occur, as in the eastern and southeastern sections of the country (Dyer [19]).

Materials—The sera used in carrying on this study include: (1) sera from cases of past infection with either endemic typhus or Rocky Mountain spotted fever; (2) sera from active cases of endemic typhus or Rocky Mountain spotted fever; (3) sera from patients with other diseases.

The typhus antigens were prepared by grinding the yolk sacs of infected chick embryos in the 5th or 6th passage when they showed numerous rickettsiae, with sterile alundum, after draining to remove some of the yolk. A 10 per cent suspension in 0.85 per cent sterile saline with 1:10,000 merthiolate was prepared. This was centrifuged at low speed in the horizontal centrifuge in order to remove the larger particles. The supernatant fluid was then centrifuged for 1 hour at 4,000 r.p.m. The precipitate was suspended in 0.85 per cent saline containing merthiolate to the original volume. The precipitate which settled from this suspension after standing 1 to 2 days was discarded. Further tissue precipitate settles on standing, but it has been found that this is not anticomplementary and the suspension may be shaken at the time of titration or for later use. The antigens were titrated to determine the lowest concentration at which fixation was obtained with a pooled specimen of known sera.

Methods—All of the specimens, both from the typhus and spotted fever cases, were tested against the endemic typhus antigen. Only a few tests were made with spotted fever antigens. The test was carried out as has previously been described, using 0.2 ml. amounts of inactivated sera in dilutions ranging from 1:2 to 1:256 or higher, 0.2 ml. amounts of antigen, and 0.2 ml. amounts of complement. After 1 hour's incubation, 0.4 ml. of sensitized sheep cells was added and incubation continued for another hour. After storage in the refrigerator over night readings were made the following morning. Fixation at 3+ or 4+ was considered a positive test.

RESULTS

1. *Non-rickettsial diseases*—It might be expected that the complement-fixation test would be specific as far as non-rickettsial diseases are concerned. This was found to be true among those investigated. Included were 14 cases of tuberculosis, 10 cases of leprosy, 6 cases of malaria, 10 cases of syphilis, 10 cases of rheumatic fever, 13 cases of tularemia, 7 cases of undulant fever, 8 cases of typhoid fever, 8 cases of trachoma, 2 cases of lymphopathia venereum, 1 case of psittacosis, and 2 cases of amebiasis (Table 1). These sera were freshly drawn, with the exception of some of those from undulant fever, tularemia, and typhoid, which had been stored for periods of several weeks at icebox temperature. Slight fixation occurred in the lower dilutions in certain of the leprosy, undulant fever, and tula-

TABLE 1

Complement-fixation in Non-rickettsial Diseases

No. of specimens	*Disease*	*Complement-fixation*	*Remarks*
14	Tuberculosis	0	
10	Leprosy	0 to very slight	7 fixed complement in dilution 1:2 (1+ or 2+)
6	Malaria	0	2 cases active 2 cases cured 2 cases with tabes dorsalis
10	Syphilis	0	3 cases primary 3 cases secondary 4 cases tertiary
10	Rheumatic fever	0	
7	Undulant fever	0 to very slight	6 fixed complement in dilutions 1:2 to 1:4 (1+ or 2+). Titers against abortus antigen were 1:160 to 1:5120.
13	Tularemia	0 to very slight	7 fixed complement in dilutions 1:2 to 1:8 (1+ or 2+). Titers against tularense antigen were 1:8 to 1:1280.
8	Typhoid fever	0	
8	Trachoma	0	2 cases papillary 1 case granular 1 case cicatricial
2	Lymphopathia venereum	0	
1	Psittacosis	0	
2	Amebiasis	0	

remia cases, but these were usually incomplete and not higher than 1:2 or 1:4 dilutions. All of the undulant fever cases were positive by agglutination in dilutions 1:160 to 1:5,120 against Brucella antigen, and the tularemia cases were positive against tularense antigen in dilutions 1:8 to 1:1,280.

2. Active and past endemic typhus infections—The study of known typhus cases has been extended beyond that previously reported. The complement-fixation titers and the Weil-Felix titers of a series of specimens from a case of endemic typhus resulting from a laboratory infection have been determined (Figure 1). The complement-fixation titer increased from 1:8 on the 10th day to 1:4,096 on the 15th day, then fell to 1:2,048 on the 16th day. On the 85th day the titer was 1:1,024 and on the 180th day 1:512, thus showing a gradual decrease. The Weil-Felix titer ran approximately ten times as high as the complement-fixation titer on the 15th or 16th day and fell off more rapidly, reaching 1:320 on the 85th day and 1:160 on the 180th day. A positive test by the Weil-Felix reaction was evident earlier than by complement-fixation, a titer of 1:80 being reached on the 6th day, 1:320 on the 9th day, and 1:1,280 on the 10th day.

In another case of typhus, originating as the result of a laboratory infection, the development of complement-fixing antibodies was much slower (Figure 2), a titer of 1:2 being reached on the 6th day, 1:4 on the 7th day, and 1:8 on the 14th day. The corresponding Weil-Felix titers were 1:320 to 1:5,120. This appears to have been an exceptional case. By 3 months the complement-fixation titer was 1:512 and the Weil-Felix titer 1:640.

Sera from 53 cases of past infection with endemic typhus were tested by the complement-fixation and Weil-Felix

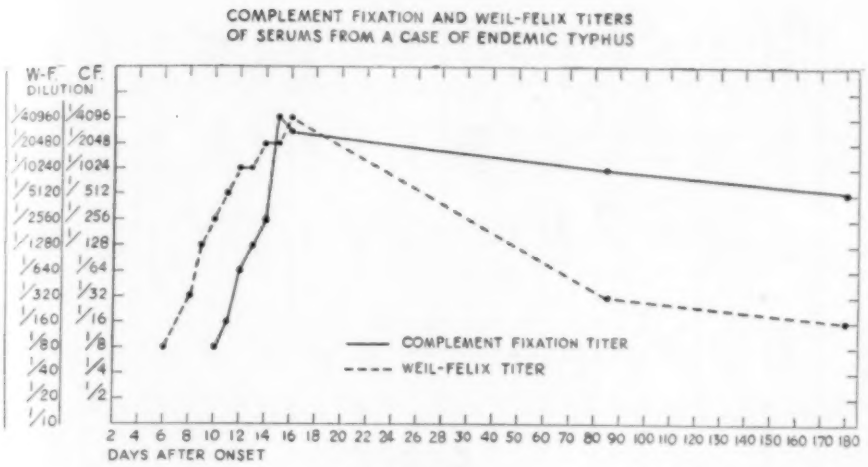

FIGURE 1

methods. All of these cases had occurred in Georgia and Alabama. The dates of occurrence varied from 2 months to 67 months prior to the time the sera were drawn. Fifteen cases were proved cases of endemic typhus, the virus having been isolated in guinea pigs. The diagnoses of the remaining 38 cases were based on clinical symptoms. It is possible that some of the cases which showed low titers may have been incorrectly diagnosed. It is significant, however, that the results of the tests agree so well with the diagnoses of the physicians, though it is to be considered that these cases occurred in a section of the country where the disease is endemic and therefore perhaps more likely to be correctly diagnosed.

The results obtained with these 53 cases are shown in Figure 3. The number of months elapsing between the date of onset and the date when the serum was obtained are represented by the abscissae and the complement-fixation and Weil-Felix titers by the ordinates. The graphs represent the average titers of all of the sera which were drawn at approximately the same length of time after onset of illness. It is very probable that the severity of the infection, as well as the length of time elapsing since onset, influences the titer of the serum, hence the irregularities in the titers. The general trend of the graph representing the complement-fixation titers indicates a rather gradual decrease in this titer. If we assume that, at certain stages at least, the Weil-Felix titer is approximately ten times that of the complement-fixation titer, it is obvious that in general the Weil-Felix titers in these samples are much lower than the corresponding complement-fixation titers, though it is to be noted that all of these cases had occurred 2 months or more prior to the time the serum was obtained. Only one serum

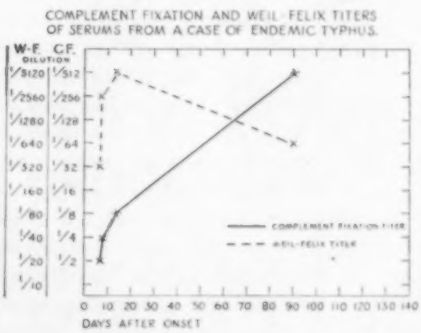

FIGURE 2

TABLE 2

Complement-fixation in Endemic Typhus

Patient	*Sex*	*Age*	*Race*	*Locality*	*Tick, flea or rat exposure*	*Symptoms*	*First appearance of rash*	*Physician's diagnosis*	*Date of onset*	*Serum collected*	*Weil-Felix titer*	*Complement-fixation-titer (Typhus)*
1. WB	M	24	W	Ohio	Rats	Chill, fever, cough	Face and neck Dec. 10	Typhus	Dec. 6, 1940	8 months	1:80	1:256
2. PC	M	45	W	Md. D. C.	Rats	Chill, fever, aching, sweats	Body, Dec. 24	Typhus	Dec. 20, 1940	85 days	1:1280	1:128
3. EP	M	*	W	Ga.	Laboratory infection	Typical typhus symptoms. Severe case.	6th day	Typhus	Feb. 1, 1941	74 days	1:1280	1:1024
4. WG	M	*	W	Ga.	Laboratory infection	Typical typhus symptoms. Mild case.	6th day	Typhus	Feb. 1, 1941	74 days	1:40	1:512
5. AF	M	9	W	N. J.		Chill, fever	Feb. 25	Brill's disease	Feb. 20, 1941	31 days	1:2560	1:256
6. SW 6a. "	F	55	W	Mass. Fla.		Fever	Body	Typhus or RMSF	Mar. 12, 1941	13 days 16 "	1:1280 1:5120	1:128 1:128
7. AR	M	*	W	Mass. Fla.		Chill, fever, headache, sweats	Body, Mar. 24	Typhus or RMSF	Mar. 17, 1941	22 days	1:20480	1:4096
8. RF	M	*	W	N. Y.	Tick bite	Severe headache, semi-consciousness	Body, Mar. 26	Typhus or Brill's dis.	Mar. 20, 1941	16 days	1:2560	1:8192
9. EW	M	64	W	Cuba		Malaise, headache, fever	No skin manifestation	Typhus?	Aug. 8, 1941	9 days	1:2560	1:256
10. MC	F		W	Ga.		Chill, fever, headache	Body, June 1	Typhus	May 27, 1941	10 days	1:1280	1:256
11. LM 11a. "	M	31	W	N. C.		Fever, sweats, headache	Rash	Typhus	June 13, 1941 †	11 days 35 days	1:20480 1:5120	1:4096 1:8192
12. SC	M	20	W	Conn. Fla.	Rats	Fever, malaise, headache, sweats	Trunk and extremities, June 9–16	Brill's disease	June 5, 1941	June 18 approx.	1:20480	1:3192
13. JR	M	*	W	Ala.	Rats	Chill, fever, sweats headache	Body, June 29	Typhus	June 23, 1941	30 days (?)	1:2560	1:128
14. MS	F	35	W	Okla. Texas		Chill, fever, headache	Upper portions of extremities	Typhus or RMSF	July 9, 1941	15 days	1:1280	1:1024
15. WG	M	36	W	Va. D. C.	Rats	Fever, headache	None	Typhus	Aug. 26, 1941	20 days	1:10240	1:8192

* Adults
† Estimated

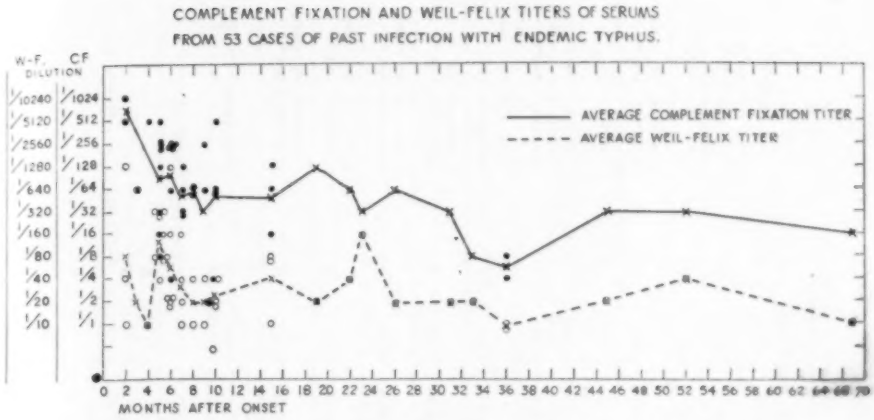
COMPLEMENT FIXATION AND WEIL-FELIX TITERS OF SERUMS
FROM 53 CASES OF PAST INFECTION WITH ENDEMIC TYPHUS.
W-F. DILUTION
CF
AVERAGE COMPLEMENT FIXATION TITER
AVERAGE WEIL-FELIX TITER
MONTHS AFTER ONSET

FIGURE 3

had a Weil-Felix titer higher than 1:320 in 6 months, and after this none was higher than 1:160, and the majority had titers of 1:80, 1:40, or lower. The complement-fixation titers with a few exceptions were 1:16 or higher even in one case which had occurred 5½ years previously. It is, therefore, evident that the complement-fixation titer of the serum is a much better criterion of past infection than is the Weil-Felix titer.

3. *Endemic typhus and Rocky Mountain spotted fevers*—The specificity of the complement-fixation test for endemic typhus has been further investigated by a comparative study of the results obtained with serum from active cases of endemic typhus and Rocky Mountain spotted fevers against a typhus antigen. A few cases of past infection are also included in this group. In the typhus group are 11 active 1941 cases and 4 cases of past infection. The Rocky Mountain spotted fever cases include 20 active 1941 cases and 10 cases of past infection, 2 of which occurred in 1939 and 8 in 1940. The sera from most of the active cases are those received at the National Institute of Health with requests for the Weil-Felix test, or for the complement-fixation test, or for tests to differentiate between endemic typhus and Rocky Mountain spotted fever. A number of sera from cases of both endemic typhus and Rocky Mountain spotted fevers have been received from the branch Typhus Research Laboratory of the National Institute of Health at Savannah, Ga., and others from the Georgia State Health Department.

In order to evaluate the results of the tests, an effort has been made to obtain all the information necessary from the clinical standpoint for a diagnosis, using records from the hospitals or attending physicians. This information includes age and sex of patient, locality where the case occurred, date of onset of illness, history of tick or flea exposure, clinical symptoms, date of appearance, location and description of rash, the date when the specimen was obtained, and the physician's diagnosis.

Weil-Felix tests and complement-fixation tests were done on all specimens, using an endemic typhus antigen as previously stated in all the complement-fixation tests whether the sera were from cases diagnosed as endemic typhus or Rocky Mountain spotted fever. It was anticipated that positive results would be obtained in all the typhus cases and that probably negative

TABLE 3

Complement-fixation in Rocky Mountain Spotted Fever (Typhus Antigen)

Patient	*Sex*	*Age*	*Race*	*Locality*	*Tick, flea, or rat exposure*	*Symptoms*	*First appearance of rash*	*Physician's diagnosis*	*Date of onset*	*Serum collected*	*Weil-Felix titer*	*Complement-fixation titer*	*Remarks*
1. GH	F	6	W	Md.		Fever, headache		RMSF	1939	2 years	1:10	0	
2. VH	F	13	W	Md.		Fever, headache		RMSF	1939	2 years	1:20	0	
3. GB	F	35	W	Ga.	Ticks	Chill, malaise, fever	Thighs, wrists June 5	RMSF	May 29, 1940	11 months	1:80	0	Confirmed by cross-immunity test *
4. HE	M	11	W	Md.	Ticks?	Fever, headache, nausea	Extremities May 14	RMSF	May 12, 1940	9 months	1:160	0	
5. LS	M	..	W	Ga.	Ticks	Chill, fever, headache, delirium	Legs, forearms July 6	RMSF	June 28, 1940	10 months	1:20	0	Confirmed by cross-immunity test *
6. MS	F	5	W	Ga.	Ticks	Fever, headache, delirium	Legs, forearms July 5	RMSF	June 28, 1940	10 months	1:20	0	Confirmed by cross-immunity test *
7. MB	F	9	W	Ga.	Ticks	Fever, headache	Extremities July 22	RMSF	July 14, 1940	10 months	1:10	0	Confirmed by cross-immunity test *
8. RW	M	..	W	Ga.	Ticks	Fever, headache, moderately severe	Chest and abdomen July 17	RMSF	July 15, 1940	9 months	1:80	0	Confirmed by cross-immunity test *
9. MJB	F	10	W	Ga.	Ticks?	Fever, headache	Extremities July 30	RMSF	July 24, 1940	9 months	1:40	0	Confirmed by cross-immunity test *
10. EJ	M	5	W	Ga.		Fever, headache	Legs and forearms—Aug. 10	RMSF	Aug. 7, 1940	8 months	1:10	0	Confirmed by cross-immunity test *
11. LD	F	4	W	Md.	Ticks	Fever, labored respiration	Arms and legs	RMSF	Apr. 25, 1941	9 days	1:640	0	Fatal case
12. JR	M	10	W	Md.		Typical spotted fever	Extensive Apr. 28	RMSF	Apr. 23, 1941	13 days		1:16(2+)	Fatal case
13. MH							Extremities			5 days	0	0	
13a. "	F	..	W	Ga.	Ticks	Fever	May 5	RMSF	May 6, 1941	7 days	0	0	
14. FR										6 days	1:1280	0	
14a. "										12 "	1:5120	0	
14b. "	M	..	W	Md.	Ticks	Fever, cough	Hands and feet	RMSF	May 15, 1941	58 "	1:80	0	
15. KT						Fever, headache, aching in body and legs	Arms and thighs May 30	RMSF or Typhus	May 29, 1941	14 days	1:20480	1:256	
15a. "	F	3	C	Miss.	Ticks					54 "	1:1280	0	

TABLE 3 (Cont.)

Complement-fixation in Rocky Mountain Spotted Fever (Typhus Antigen)

Patient	Sex	Age	Race	Locality	Tick, flea, or rat exposure	Symptoms	First appearance of rash	Physician's diagnosis	Date of onset	Serum collected	Weil-Felix titer	Complement-fixation titer	Remarks
16. MM	F	5	W	Va.	Ticks	Chill, fever, aching	Extremities	RMSF	June 17, 1941	10 days	1:160	1:8	
17. Mrs. AV	F	..	W	Ky.			Extremities	Typhus or RMSF	June 1941	6-9-41	**1:2560**	**0**	
18. Mrs. JL	F	..	W	Conn.	Ticks?	Malaise, headache, fever	Body	Typhus or RMSF	June 20, 1941	1 day	1:10	0	
18a.							June 22		July 7,	18 days	1:20	**0**	
19. RH	F	36	W	Md.	Ticks?	Chill, fever, severe aching	Body July 1	RMSF or typhus	June 28, 1941	24 days	1:1280	1:32(2+)	
20. Mrs. S	F	46	W	Ga.	Ticks	Chill, fever, nausea	Wrists and ankles	RMSF	June 30, 1941	8 days	1:320	1:8(2+)	
21. LS	F	42	W	Ga.	Ticks?	Chill, fever, headache	Over entire body—July 9	RMSF or typhus	July 7, 1941	16 days	1:2560	0	
22. DP	M	4	W	Ga.	Ticks	Typical symptoms of RMSF	Extremities	RMSF	July 11, 1941	10 days	1:80	0	
23. Mr. P	M	35	W	Ga.	Ticks	Headache, fever, body pains	Extremities July 13	RMSF	July 12, 1941	5 days	0	1:4	
24. MB	F	28	W	Md.				RMSF	July	7-22-41	1:10240	1:32(2+)	
25. LR	F	69	W	Ky.	Ticks	Fever, sweats, delirium	Ankles	RMSF	July 13, 1941	11 days	1:160	0	Fatal case
26. DM	F	10	W	Pa.	Ticks	Fever, pain	Wrists and ankles	RMSF	July 20, 1941	24 days	1:1280	**0**	
27. OM	M	34	W	N. Y. Mont.	Ticks	Chill, fever, aching	No rash	RMSF	July 21, 1941	14 days	1:20	0	Had had course of vaccine
28. JS	M	28	W	Va.	Ticks	Fever, prostration	Characteristic rash. 4th day	RMSF	July 24	21 days	1:20	0	
29. WW							Body			13 days	1:320	0	
29a. "	M	19	C	Ky.	Ticks	Fever, aching	Aug. 6	RMSF	Aug. 2, 1941	25 "	1:640	1:4	
30. NN	M	36	W	W. Va.		Chill, fever	Generalized rash. 1 week	RMSF or typhus	Aug. 6, 1941	7 days	1:40	**0**	

* Immunity tests by Dr. George D. Brigham, Typhus Research Laboraotry, Savannah, Ga.

results would be obtained in the spotted fever cases.

Considering the endemic typhus cases (Table 2), it was found that all of these gave positive results in comparatively high dilutions, none being lower than 1:128 and several as high as 1:4,096 and 1:8,192. Among the active cases, the shortest time recorded between the date of onset and the date of obtaining the serum was 9 days, and in this case the complement-fixation titer was 1:256. One of the highest titers recorded, 1:8,192, was on the 16th day. All of the results obtained in these tests were definite and clear-cut, and usually the titer dropped sharply from positive to negative. In those cases having a high complement-fixation titer the Weil-Felix titers were usually correspondingly high. Also in the 3 cases of past infection the results with the complement-fixation test were definite, the titers ranging from 1:256 to 1:1,024.

The majority of these cases were adults living in the eastern or southeastern sections of the country and several gave a history of contact with rats. The rash in most cases was typical of endemic typhus, occurring first on the body.

The 30 cases of Rocky Mountain spotted fever (Table 3) in contrast to the endemic typhus fever gave negative results for the most part in tests against endemic typhus antigen, though positive Weil-Felix agglutination titers were obtained in fairly high dilutions in a number of cases. All of the 10 cases of past infection which occurred from 8 months to 2 years prior to the test gave negative results in the complement-fixation test.

The active cases of Rocky Mountain spotted fever date from April 23, 1941. Eighteen specimens from 14 cases were all completely negative against endemic typhus antigen (Table 4).

The sera from 8 cases showed some cross-fixation with typhus antigen (Table 5). In probably none of the above cases was fixation present in a high enough titer to be considered significant, with the exception of the one case, K.T., in which complete fixation was obtained in the dilution of 1:256

TABLE 4

Complement-fixation in Rocky Mountain Spotted Fever (Typhus Antigen)
No Cross-Fixation

Case	*Days after onset*	*Weil-Felix titer*	*Complement-fixation titer*
11. LD	9	1:640	0
13. MH (1st specimen)	5	0	0
(2nd specimen)	7	0	0
14. FR (1st specimen)	6	1:1280	0
(2nd specimen)	12	1:5120	0
(3rd specimen)	58	1:80	0
15. KT (2nd specimen)	54	1:1280	0
17. Mrs. AV	..	1:2560	0
18. Mrs. JL (1st specimen)	1	1:10	0
(2nd specimen)	17	1:20	0
21. Mrs. LS	16	1:2560	0
22. DP	10	1:80	0
25. Mrs. LR	11	1:160	0
26. DM	24	1:1280	0
27. OM (2nd specimen)	14	1:20	0
28. JS	21	1:20	0
29. WW (1st specimen)	13	1:320	0
30. NN	7	1:40	0

TABLE 5

Complement-fixation in Rocky Mountain Spotted Fever (Typhus Antigen)

Cross-Fixation

Case	Days after onset	Weil-Felix titer	Complement-fixation Titer 1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024	1:2048	1:4096	1:8192	1:16384	1:32768
12. JR	13	....	2	2	2	2	0	0									
15. KT	14	1:20480	4	4	4	4	4	4	4	4	3	2	0				
16. MM	20	1:160	4	3	2	0	0	0									
19. RH	24	1:1280	3	3	2	2	2	0									
20. Mrs. S	8	1:320	2	2	1	1	0	0									
23. MB	..	1:10240	3	2	2	2	2	1									
24. Mr. P	5	0	3	3	1	0	0	0									
29. WW	25	1:640	4	3	0	0	0	0									
Typhus Controls																	
15. WG	20	1:10240	4	4	4	4	4	4	4	4	4	4	4	4	4		
16. WD	..	1:320	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3

and partial in the 1:512 dilution. This case was a 3 year old child from whom ticks had been removed and who had had a rash typical of Rocky Mountain spotted fever. This specimen was taken on the 14th day, at which time the Weil-Felix titer was 1:20,480. A second specimen taken on the 54th day of illness was completely negative for typhus by the complement-fixation test, while it had a positive Weil-Felix in the 1:1,280 dilution. The high Weil-Felix titer may bear some relationship to the high cross-fixation titer or the possibility may be considered that this case may have suffered a previous typhus infection, since the locality was one in which endemic typhus prevails.

In repeated tests on the above specimens in which some cross-fixation occurred, it was found that fixation could be reduced by using a more dilute antigen, titration of the antigen being made against known typhus sera in order to insure that dilution was not carried past the point where positive results would be obtained. It was thus found possible to dilute some of the antigens as much as 1:32.

COMMENT

The question of the best method for the early diagnosis and the differentiation between typhus and Rocky Mountain spotted fever is one which cannot be answered completely at the present time. The Weil-Felix test has proved very useful as a diagnostic test for certain rickettsial diseases without differentiating between them. The complement-fixation test for endemic typhus is positive in sufficiently high dilutions in general to exclude Rocky Mountain spotted fever. In some cases positive results were obtained in dilutions of 1:256 on the 9th or 10th day after onset. There may occasionally be some confusion between early cases of typhus or those of typhus in which complement-fixing antibodies develop slowly (see Figure 2), and cases of Rocky Mountain spotted fever which are more advanced or in which there is a rapid development of antibodies. However, this subject can be more adequately studied when studies similar to these reported are made with spotted fever antigens.

SUMMARY

The complement-fixation test for endemic typhus is of value in the detection of active or past infection. Titers of 1:128 and 1:256 may be reached on the 9th or 10th day of illness and 1:4,096 and 1:8,192 on the 14th or 15th day.

The complement-fixation reaction is a better criterion of past infection with endemic typhus than is the Weil-Felix

test as complement-fixing antibodies may be present in significant dilutions up to 5 or more years after the illness.

The complement-fixation test may probably be used to differentiate between endemic typhus and Rocky Mountain spotted fevers. Spotted fever sera tested against a typhus antigen as a rule give a negative reaction, while at the same time a positive Weil-Felix reaction may be obtained in quite high dilutions of serum. Occasionally there may be some cross-fixation of typhus antigen by spotted fever sera, but usually in low dilutions. Tests similar to those reported in which a spotted fever antigen is used may elucidate this phase of the problem.

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Developing a Comprehensive Health Service in Puerto Rico*

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GEOGRAPHICALLY Puerto Rico lies midway between the North and South American continents—a sentinel in the path of possible approaches of attack against the Western Hemisphere, but also a way station in the routes of peaceful communication, and a stepping stone to friendly relations between the Americas. Puerto Rico is, therefore, well fitted to become the meeting place of the peoples of this hemisphere for the furthering of common interests and the development of useful and highminded initiatives, especially in the field of public health administration and research.

Toward this end no enterprise could be more useful, no initiative more altruistic than the organization of technical and scientific work for the promotion and preservation of the public health. It is, therefore, with deep satisfaction and high hope that we have founded the Puerto Rico Public Health Association, whose self-imposed task is " to promote the public health by bringing together in closer association persons professionally engaged or interested in public health, by furthering their scientific advancement, by helping to spread public health knowledge, by stimulating and promoting research in public health and hygiene, by aiding in the adoption of legislation in the interest of public health, and by volunteering assistance in times of stress or need."

The new association will not only thus come as a very welcome aid to the labors of the Health Department, but will also contribute to a better understanding between our fellow workers from the two continents. The association will also help materially to increase our efficiency in the field of public health, with benefit not only for our own Insular people but also for the nation as a whole and the continent at large.

Effective, conscientious training is absolutely essential for the success of any public health program that aspires to be of more than momentary significance. This is the reason why the Insular Department has always striven to engage the services of well trained men and women. To achieve this end, several years ago the Health Department organized a training center for nurses, sanitarians, and laboratory technicians, where short courses lasting from 6 to 8 weeks were given. In addition, through the facilities generously extended to it by the Rockefeller Foundation, the department was able to select a number of physicians, public health nurses, and sanitary engineers to hold fellowships for the purpose of pursuing graduate studies in the United States. These persons, upon their return to Puerto Rico, were placed in key positions within the department.

* Address at the inaugural meeting of the Puerto Rico Public Health Association, San Juan, P. R., September 23, 1941.

As a natural result of these efforts, a Department of Public Health was created a year ago at the School of Tropical Medicine, San Juan, in coöperation with the University of Puerto Rico, Columbia University, and the Insular Department of Health, for the graduate training of physicians, sanitarians, technicians, and nurses. The curriculum embraces an extensive program, lasting a year, and includes the usual special courses to meet the needs of the students. The Public Health Unit at Rio Piedras has been reorganized to function as a modern experimental unit and as a specialized center for public health practice in the field. At the beginning of this scholastic year the facilities for the training of our personnel have also been extended by inaugurating a one year course of study for social workers in the College of Education of the University of Puerto Rico.

In Puerto Rico a low standard of living, with illness and widespread suffering, results from the geographical limitations, with extremely high population density, limited natural resources, lack of major industries, a large amount of unemployment and low wages. Such conditions are aggravated by the presence of a number of endemic diseases, notably malaria and hookworm, which are widely prevalent in tropical and subtropical districts. However, a large part of the illness on the Island is susceptible to control measures if funds become available.

The present Commissioner of Health was appointed during the year 1933, and a program was formulated which contemplated an attack on the fundamental problems responsible for a high mortality and considerable disease prevalence. Among other things this program provided for the extension of public health units under full-time medical officers to cover the 76 municipalities, organization of services for tuberculous patients based on sound epidemiological principles, an island-wide program for treatment of venereally infected persons, extensive measures in rural sanitation and malaria control, and adequate hospital facilities for the care of the underprivileged population on the Island.

The first public health unit had been organized in the town of Rio Piedras during the year 1926; in 1933 there were 32 municipalities with this type of service, and during 1938 the entire territory of the Island, consisting of 76 municipalities, was being served by local public health units. In continental United States, where these units began to be organized more than 25 years ago, there were recently only 15 states with the entire territory covered by full-time health service, and in South American countries, although these agencies are rapidly being organized, their establishment is only in an early stage.

As a part of the tuberculosis program, hospital beds for the isolation of indigent patients were increased by 1,000, and treatment centers for ambulatory patients are being operated in 20 districts. An average of 75,000 fluoroscopies and 40,000 x-ray examinations are performed annually by trained physicians in these centers as a part of the case finding program. Approximately 3,000 tuberculous patients are hospitalized and over 5,000 are given artificial pneumothorax every year, with the result that in approximately 50 per cent of such cases the sputum is converted from positive to negative, eliminating a large number of foci of infection from the community. As a consequence of this program the mortality from this disease has dropped from a rate of 337 per 100,000 population in 1933 to a rate of 258 during the year 1939, a decrease of 23 per cent.

According to studies made by the Insular Health Department, 10 per cent of the urban and 5 per cent of the rural population have a positive serology for

syphilis. With the extension to Puerto Rico of the benefits of the La Follette-Bulwinkle Act, together with an appropriation of the Insular Legislature, it has been possible to operate 35 dispensaries throughout the Island for the diagnosis and treatment of venereal disease patients. Approximately one-half million complement-fixation and flocculation tests for the diagnosis of syphilis were performed last year, and not less than 20,000 indigent persons received treatment for which they could not afford to pay.

The large majority of the inhabitants in the rural districts earn wages which are entirely inadequate to provide their families with food, shelter, and other elementary needs of civilized people. Because of this fact, approximately 50 per cent of the homes in rural communities have no sanitary facilities, the soil contamination contributing to the spread of hookworm and other filth-borne diseases. In coöperation with the Works Progress Administration, the Insular Health Department is carrying out a project to provide rural homes of indigent persons with sanitary privies. During a period of approximately two years, 24,000 such privies have been constructed in 18 factories and distributed to indigent persons.

With 90 per cent of the families of this Island receiving an income of less than $500 per year per family, medical care to the underprivileged has to be a responsibility of the government. Up to 1938 such care was provided in municipal hospitals which lacked the necessary equipment and trained personnel required by modern medical standards. Because of this fact, a program has been formulated for the centralization of such services in the Insular Government and provision has been made for seven large district hospitals with a capacity of 300 beds each, including services of surgery, medicine, obstetrics, and pediatrics. Four of these hospitals have already been constructed, three of which have been adequately equipped and are in full operation. Equipment for the fourth hospital is being purchased at the present time and it will begin to function in the near future.

With the extension to the Island of the benefits of Titles V and VI of the Social Security Act, funds became available for the expansion of the public health program. Additional prenatal and infant hygiene clinics were opened in several municipalities, providing added facilities greatly needed for the care of infants and expectant mothers; part-time dentists were added to the staff of local health units in ten municipalities; two mobile dental units were purchased which are being used in rural districts; orthopedic care is being provided to the crippled; a nutrition program is being developed and additional public health nurses, social workers, laboratory technicians, and sanitarians have been employed to expand the scope of the local health unit program.

In connection with national defense numerous activities are being developed by the Insular Health Department to protect the armed forces stationed on the Island. A large part of the physical examinations carried out among the draftees were performed by members of the Health Department staff; blood tests have been made among 20,248 selectees, and those that showed a positive serology are receiving adequate treatment in the clinics in order to restore them to the service in the army; a total of 9,805 x-ray films of the chest have been taken among men who passed the physical examination for army duty in the local boards of the Selective Service, in order to eliminate the physically unfit, and malaria control work is being carried out intensively in the neighborhood of army camps to protect the health of the armed forces.

Because of its geographical location,

its vast culture acquired during past centuries, the bilingual advantages of its people as well as its political and scientific connections with the United States, Puerto Rico is especially well suited to act as an aid to continental solidarity and to serve as a meeting ground for inter-American conferences. To this end the first Inter-American Institute for Hospital Administrators was held in San Juan during the period December 1–13, 1940, under the auspices of the American College of Hospital Administrators and the American Hospital Association, and in coöperation with the University of Puerto Rico, the Insular Department of Health, the Puerto Rico Medical Association, the School of Tropical Medicine, the Territorial Charities Board, and the Puerto Rico Hospital Council. Distinguished visitors from the continent as well as representatives from seven South and Central American republics participated in the conference.

I am confident that the foundation of a public health association in Puerto Rico will be a useful step in achieving high professional levels. It also will contribute to a higher standard of work and to make the particular health problems of the Island better known and better understood in the continental United States.

Healthy citizens are the foundation of a strong nation. In the present national emergency the Puerto Rico Department of Health will use every means available to improve the stamina of the people, adding its efforts to the national program and coöperating in the task of making the nation a stronger and healthier champion of democratic institutions.

Field Study of the Prophylactic Value of Pertussis Vaccine*

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A CONTROLLED study of the prophylactic value of Phase I pertussis vaccine was conducted in Binghamton, N. Y., from January 1, 1939, to November 1, 1940. The vaccine was prepared in the same manner as that used by Pearl Kendrick and Grace Eldering in their Grand Rapids, Mich., study [1] and was furnished by the Michigan State Health Department Laboratories. Three subcutaneous injections of 2.0 ml., 3.0 ml., and 3.0 ml., respectively, or a total of 8.0 ml. (80 billion organisms) were given at weekly intervals to children eligible for the study. Children from 6 months through 4 years of age attending the Binghamton City's well baby clinics were considered eligible if they had no history of pertussis or pertussis immunization.

In connection with another investigation conducted at the same time, each eligible child was given a hemolytic streptococcus toxin skin test, and every other child was given the pertussis vaccine as well. The children receiving only the skin test were kept as controls. The vaccinated children were entered in the study on the date of the last injection, while each control child was entered 2 weeks from the date of the skin test, so as to be entered at the same time as the corresponding vaccinated child. When there was more than one eligible child in a family, the practice of vaccinating the younger child was alternated with that of vaccinating the older child, to equalize the age distribution in the control and vaccinated groups. Only occasionally was it found impossible to follow this schedule, since the mothers were in the habit of accepting without question the recommendations of the woman pediatrician in charge, who had served in this capacity for many years.

Reactions to the vaccine were negligible.*

Five hundred and ninety-three children were given the complete series of injections. Excluding 6 who moved out of town immediately after the last

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* The sole reaction which might be classified as severe occurred in a 22 months old boy who developed convulsions and fever following the first injection. No further inoculations were given. This child's history indicated a proneness toward convulsions following relatively slight stimuli.

TABLE 1

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Person Months of Observation of Vaccinated and Control Children

Year and Month	Person Months of Observation		Year and Month	Person Months of Observation	
	Vaccinated	Controls		Vaccinated	Controls
1939			1940		
Jan.	26	10	Jan.	530	505
Feb.	115	75	Feb.	524	504
Mar.	212	166	Mar.	520	510
Apr.	263	221	Apr.	518	519
May	302	273	May	514	520
June	388	332	June	506	517
July	484	414	July	498	517
Aug.	534	476	Aug.	492	518
Sept.	551	490	Sept.	486	520
Oct.	546	498	Oct.	478	523
Nov.	540	506			
Dec.	536	508	Total person months	9,563	9,122
			Total person years	797	760

inoculation, 587 children formed the vaccinated group. The control group consisted of 699 children.

Table 1 shows the number of vaccinated and control children under observation during each month. It will be noted that in spite of plans there was a slight lag in the entering of controls compared with vaccinated children during the first 6 months, so that when all of the immunizations had been completed (August, 1939), the vaccinated group was furnishing a somewhat greater number of person months of observation than the control group. It was decided, therefore, to admit to the study as control children all infants in study families as they reached 6 months of age. As a result, it will be observed that although the person months of observation in the vaccinated group progressively declined from September, 1939, the person months of observation of the control group levelled off, and toward the last slightly increased. The table indicates, however, that the person months of observation for each group were approximately the same for each month throughout the entire period. Taking the study as a whole, there was a total of 9,563 person months of observation for the vaccinated group, and 9,122 for the control group; or in terms of person years, 797 for the vaccinated group, and 760 for the control group.

METHOD OF OBSERVING STUDY CHILDREN

Every study family was visited once a month by a nurse to determine the occurrence of any illness during the interval in any member of the household. Two, and later, three nurses devoted their entire time to this visiting of families. All the nurses were on the regular staff of the Division of Public Health Nursing of the State Department of Health, and had the status of either supervising nurse or communicable disease consultant. In addition to the routine monthly visits, a call was made immediately upon a report from the family that an illness had occurred in the home, or upon the receipt of a report by the City Health Department indicating that whooping cough had been diagnosed in a member of the study household.

Every illness considered at all suspicious of whooping cough was referred by the nurse to a physician for investigation. The physician for this purpose was one of the two regularly employed epidemiologists in the Division of Communicable Diseases in the State Health Department. Unavoidable changes in personnel during the study period, how-

TABLE 2

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Study Children According to Economic Status of Household

Economic Status	Number of Children			Per Cent		
	Vaccinated	Controls	Total	Vaccinated	Controls	Total
Good	137	112	249	24.1	16.4	19.9
Fair	246	288	534	43.2	42.0	42.6
Poor	186	285	471	32.7	41.6	37.6
Not stated	18	14	32			
Total	587	699	1,286	100.0	100.0	100.0

TABLE 3

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Study Children According to Size of Household *

Number in Household	Number of Study Children		Per Cent	
	Vaccinated	Controls	Vaccinated	Controls
3	110	83	18.7	11.9
4	146	169	24.9	24.2
5	120	137	20.4	19.6
6	73	104	12.4	14.9
7	55	68	9.4	9.7
8	28	55	4.8	7.9
9	22	28	3.7	4.0
10+	33	55	5.6	7.9
Total	587	699	100.0	100.0

* At time first study child in the household was entered in study.

TABLE 4

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Residence of Children as of Entry in Study

Ward	Per Cent		Ward	Per Cent	
	Vaccinated	Controls		Vaccinated	Controls
1	18.9	18.5	9	0.3	0.6
2	6.6	6.3	10	5.5	5.2
3	1.5	2.1	11	12.4	14.0
4	2.6	1.9	12	8.7	7.2
5	9.5	9.6	13	4.1	3.6
6	15.7	13.0	Out of city	4.3	3.9
7	7.7	10.2			
8	2.2	4.1	Total	100.0	100.0

ever, resulted in four different epidemiologists serving in this capacity. In investigating a suspected case of pertussis, the epidemiologist recorded the presence or absence of the characteristic whoop; presence and severity of paroxysms, vomiting, cyanosis and weight loss; laboratory findings; final opinion as to whether it was a definite case, suspicious case, or apparently not a case; and if considered to be a case, whether it was considered mild, moderately severe, or severe. The source cases in all alleged exposures were similarly investigated by the epidemiologist. White blood counts and cough plates * were used in diagnosis of cases, but both were found to be of relatively little assistance.

The epidemiologists were unaware as to which children had been vaccinated and which ones were controls, and ac-

* Of 28 cough plates from vaccinated children with suspected pertussis, none was positive. Of 65 plates from control children with suspected pertussis, 15 were positive.

cidentally learned of the status of a child in only the occasional instance.

COMPARABILITY OF THE VACCINATED AND CONTROL GROUPS

A study of the classification of the vaccinated and control children according to economic status of the family, as estimated by the nurse, reveals that the vaccinated group had a somewhat greater percentage of children from homes of good economic status (Table 2). This slight disproportion is similarly indicated in an analysis of the two groups by the number of individuals per household (Table 3). A somewhat larger percentage of the children in the vaccinated group came from households of only three members and, conversely, a somewhat larger percentage of control children came from households with eight or more individuals.

In all other respects, the two groups seem to be entirely comparable, so far as one may judge by the various criteria available for comparison. From Table 4 it is obvious that the two groups were evenly distributed geographically throughout the City of Binghamton, and Table 5 indicates that the two groups are comparable from the standpoints of age, sex, previous history of tonsillectomy, measles, and of scarlet fever; incidence during the study period of coughs due to colds, and of other respiratory illnesses considered as a group; per cent having change of address during the investigation; and the average interval between nursing visits. The coughs, it will be noted, are not only exclusive of pertussis, but of coughs preceded by exposure to pertussis. These latter coughs will be considered in detail later.

TABLE 5

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.

Study Children According to Comparability of Vaccinated and Control Children

Criterion of Comparability	*Vaccinated*	*Controls*
Average age in months *	25.1	24.6
Per cent males	50.6	54.9
Per cent with history of tonsillectomy *	4.5	3.9
Per cent with history of measles *	13.6	16.5
Per cent with history of scarlet fever *	1.2	1.6
Coughs ‡ per child (annual average) †	1.2	1.2
Other respiratory illnesses per child (annual average) †	1.9	1.8
Per cent having change of address †	38.8	40.5
Average monthly interval between nursing visits	1.1	1.1

* As of entry in study
† During period of observation
‡ Exclusive of pertussis, and coughs preceded by pertussis exposure

PERTUSSIS ATTACK RATES IN CONTROL AND VACCINATED GROUPS

In order to be as objective as possible

TABLE 6

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Objective Diagnostic Criteria

Duration of Cough	*Characteristic Whoop*	*Positive Cough Plate*	*Paroxysms*	*Vomiting **	*Classification*
14 days or more	+	..	..	..	Definite
" " " "	..	+	..	..	"
" " " "	..	..	+	+	"
" " " "	..	..	+	—	Suspicious
" " " "	..	..	—	+	"
" " " "	..	..	—	—	Possibly subclinical Pertussis †
Less than 14 days	..	..	+	+	Suspicious
" " " "	..	..	+	—	Possibly subclinical pertussis †
" " " "	..	..	—	+	" " "
" " " "	..	..	—	—	" " "

* Vomiting had to occur more than once to be counted at all.

† So classified only if there is a history of exposure to a definite or suspicious pertussis case within 35 days of onset in this source case and the onset of cough in the exposed child occurred not earlier than 5 days from first exposure, nor later than 21 days subsequent to the last exposure.

in the decision as to whether or not a given illness was whooping cough, the evaluation was based upon the individual symptoms and findings indicated on the case history sheet, rather than merely upon the opinion expressed by the epidemiologist. Arbitrary criteria were established for determining whether or not a given case was to be considered whooping cough. These criteria are presented in Table 6. It will be noted that a definite diagnosis of pertussis was made if the child's cough lasted for 14 days or more and there was a history of a characteristic whoop or if a positive cough plate was secured. In no instance was a history of a characteristic whoop or a positive cough plate secured from a child with a cough of less than 14 days' duration. In addition, a case was considered definitely whooping cough if the child had a cough with a duration of 14 days or more, and suffered both paroxysms and vomiting. Incidently, vomiting following a coughing spell had to occur more than once to be counted at all.

A cough was classified "suspicious whooping cough" if its duration was 14 days or more and the child suffered either paroxysms or vomiting, but not both, or if a child had a cough of less than 14 days' duration and had both paroxysms and vomiting. Any cough less definite than this, but occurring after exposure to a definite or suspicious pertussis case, was noted and designated "possibly subclinical pertussis."

The annual pertussis attack rates per 100 children based on these arbitrary criteria, are found in Table 7. Among the control children there occurred 101 definite and 24 suspicious cases of whooping cough, while among the vaccinated group there were only 42 definite and 19 suspicious cases. On the basis of definite cases alone, this results in an annual attack rate of 13.3 cases per 100 children among the control group, and a rate of 5.3 for the vaccinated group. The ratio of the rate among the control group to that among the vaccinated group is 2.5. When the suspicious cases are added, the rates become 16.4 among the vaccinated, and 7.7 among the controls, or a ratio in the rates of 2.1 to 1.

It will be recalled that there was some disproportion so far as economic status was concerned between the vaccinated and control groups. Although the attack rates were somewhat lower among those of good economic status (Table 8), and although there was a larger proportion of these children in the vaccinated group, this disparity is insufficient to account for the lower rate among the vaccinated children. The ratios of 2.5 and 2.1 remain unchanged when the attack rates among the control and vaccinated groups are adjusted for economic status.

TABLE 7

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Annual Pertussis Attack Rates Per 100 in Vaccinated and Control Children

		Number of Cases			Annual Pertussis Attack Rates Per 100	
Status	*Person Years*	*Definite*	*Suspicious*	*Definite and Suspicious*	*Definite*	*Definite and Suspicious*
Vaccinated	797	42	19	61	5.3	7.7
Controls	760	101	24	125	13.3	16.4
Ratio control rate to vaccinated rate					2.5	2.1

RELATIVE SEVERITY OF PERTUSSIS ATTACKS

As to the relative severity of the

TABLE 8

Prophylactic Pertussis Vaccine Study, Binghamton, N. Y.
Annual Pertussis Attack Rates Per 100 by Economic Status

Economic Status	Person Years	Annual Pertussis Attack Rates Per 100			
		Definite Cases Only		Definite and Suspicious Cases	
		Vaccinated	Controls	Vaccinated	Controls
Good	320	3.1	8.6	4.2	10.9
Fair	656	5.3	14.8	8.6	17.6
Poor	556	6.4	13.1	8.4	17.0
Not stated	25	....	....	....	....
Total	1,557	5.3	13.3	7.7	16.4
Ratio C/V		2.5		2.1	

definite cases of pertussis which occurred in the control and vaccinated groups, arbitrary criteria were established for classification, again based upon the epidemiologist's indication of the severity of the individual symptoms, rather than upon his final opinion as to the severity of the case as a whole. The criteria adopted are presented in Table 9. Paroxysms and vomiting were each

TABLE 9

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Objective Criteria as to Severity of Pertussis

Count:

If paroxysms indicated as:	mild,	count 1
	moderate,	" 2
	severe,	" 3
If vomiting indicated as:	mild,	count 1
	moderate,	" 2
	severe,	" 3
If weight loss is indicated,		count 2

Calculation:

If the sum of above is: 3 or less, classify attack as mild,
4 or 5, " " as moderate
6 or more, " " " severe

Comment:

If pneumonia developed within 21 days of onset the attack is classified as severe regardless of other criteria.

Vomiting had to occur more than once to be counted at all.

given numerical values of 1 for mild, 2 for moderately severe, and 3 for severe. Loss of weight was given a value of 2. Upon adding the numbers in a given case, the attack was classified as mild if the sum was 3 or less; moderate, if the sum was 4 or 5; and severe, if the sum totaled 6 points or more. An exception was made if pneumonia de-

TABLE 10

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Cases of Pertussis According to Severity of Attack

Severity of Attack	Number of Cases		Per Cent of Total	
	Vaccinated	Controls	Vaccinated	Controls
Suspicious	19	24	78.7	54.4
Mild	29	44		
Moderate	10	37	16.4	29.6
Severe	3	20	4.9	16.0
Total	61	125	100.0	100.0

veloped within 21 days of onset; the attack was classified as severe under these circumstances regardless of other criteria. The necessity for applying this last rule occurred in only one instance.

The result of classifying the cases in accordance with these standards is presented in Table 10. It will be noted that 79 per cent of the cases among the vaccinated group were classified as suspicious or mild, in comparison with 54 per cent among the control group. Sixteen per cent of the cases in the vaccinated group were considered moderately severe, compared with 30 per cent among the controls. Only 3 cases in the vaccinated group were classified as severe, or 5 per cent, compared with 20 cases, or 16 per cent, among the cases in the control children.

The same data presented as annual attack rates per 100 children are indicated in Table 11. It will be noted that for each classification, the rate is higher in the control group than in the

TABLE 11

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.

Annual Pertussis Attack Rates Per 100 According to Severity of Cases

Severity of Attack	Annual Attack Rate Per 100		Ratio C/V
	Vaccinated	Controls	
Suspicious	2.4	3.2	1.3
Mild	3.6	5.8	1.6
Moderate	1.3	4.9	3.8
Severe	0.4	2.6	6.5
Total	7.7	16.4	2.1
Possibly subclinical pertussis *	4.9	3.6	0.7

* That is, coughs following exposure to pertussis but so mild could not be classified as "suspicious." These rates are based upon 39 cases among the vaccinated group, and 27 cases among the control group.

vaccinated group, with a ratio of the control to vaccinated rates progressively increasing from the suspicious cases, with a ratio of 1.3, to the severe cases with a ratio of 6.5. To this table has been added the rates for "possibly subclinical pertussis." These coughs, as mentioned above, are those which did not meet the criteria for suspicious cases of pertussis, but which occurred within the incubation period of whooping cough following exposure to a definite or suspicious case. Coughs due to infection with *Hemophilus pertussis* which cannot be recognized by the ordinary diagnostic criteria undoubtedly occur, but would be expected more frequently in the vaccinated group if the vaccine were of value, since some cases which ordinarily would be sufficiently severe to permit recognition might be thus modified into subclinical attacks. It will be noted in Table 11 that the attack rate for these cases of "possibly subclinical pertussis" is higher among the vaccinated group than in the control group, contrary to the other classifications in the table, and results in a ratio of 0.7. It will be recalled from Table 5 that coughs similar to these, except for the lack of a prior history of pertussis exposure, occurred with equal frequency in the two groups.

INCIDENCE FOLLOWING EXPOSURE

Analysis of the data may also be made upon the basis of history of exposure to pertussis and the percentage of cases of pertussis developing therefrom. Data on this basis are given in Table 12. It will be noted the exposures are separated into household exposure and extra-household exposure. For purposes of this analysis, a history of exposure was counted as such only if it was to a confirmed definite case within 21 days of onset in this source case, and with onset in the exposed child occurring not earlier than 5 days from first exposure nor later than 21 days subsequent to the last exposure. Only

TABLE 12

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.

Exposures to Pertussis During Observation Period and Cases Apparently Resulting Therefrom

	In Own Household		Outside Own Household	
	Vaccinated	Controls	Vaccinated	Controls
Number of exposures *	44	46	98	103
Definite cases	14	33	8	36
Per cent exposures resulting in cases	31.8	71.7	8.2	35.0
Ratio control rate to vaccinated rate	2.3		4.3	
Definite and suspicious cases	17	39	11	41
Per cent exposures resulting in cases	38.6	84.8	11.2	39.8
Ratio control rate to vaccinated rate	2.2		3.6	

* Only one exposure counted per child. If multiple exposures, the most intimate one occurring 5 to 21 days prior to onset was counted.

Child considered exposed only if diagnosis in source case was confirmed as definitely pertussis, and exposure took place during first 21 days of illness in source case.

one exposure was counted per child. If a child suffered more than one exposure, the one tabulated was determined from a priority list of possible combinations of exposures, which gave preference to the more intimate exposure, and one resulting in illness and the more definite attack.

Considering first only the household exposures, it will be noted that 44 such exposures were observed among the vaccinated group and 46 among the control children. The exposures in the vaccinated group resulted in 14 definite cases, or 32 per cent. In contrast, household exposures among the control group resulted in 33 cases, or 72 per cent. If suspicious cases are included, the percentages become 39 and 85, respectively, for the vaccinated and control groups. The 85 per cent in the control group agrees well with numerous other studies showing the percentage of susceptible children developing pertussis upon household exposure. Considering extra-household exposure, again the numbers of histories of such exposure are very similar in the two groups; 98 among the vaccinated group and 103 among the controls. These exposures in the vaccinated group resulted in only 8 cases, or 8 per cent, while those in the control group resulted in 36 cases, or 35 per cent. Adding the suspicious cases, the percentages become 11 and 40, respectively. It will be noted that the ratio of the per cent in the control group to that in the vaccinated group is distinctly higher with regard to extra-household exposure than with reference to household exposure (4.3 and 2.3, respectively, for definite cases, or 3.6 and 2.2, respectively, for definite and suspicious cases combined). If the vaccine is of value this might be expected, since it might produce sufficient immunity to protect against a transitory extra-household exposure but not enough to protect against the more intense household exposure.

HOUSEHOLD SECONDARY ATTACK RATES

A third method of analysis is on the basis of household secondary attack rates (Table 13). The numbers are very small in this study, but consistently in each age group there is a higher secondary attack rate among the control group, compared with the vaccinated group. Taking all ages, these rates are 34 per cent among vaccinated children, compared with 79 per cent among controls.

COMPARISON WITH OTHER STUDIES

This study was conceived and instituted when the Grand Rapids[1] and Cleveland[2] studies were the most impor-

TABLE 13

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.

Household Secondary Attack Rates Among Vaccinated and Control Children by Age Groups

Age at Time of Exposure	Vaccinated		Controls		Secondary Attack Rate Per 100	
	Number Exposed	Number Secondary Cases *	Number Exposed	Number Secondary Cases *	Vaccinated	Controls
Under 1 year	4	1	8	6	25.0	75.0
1 year	20	6	13	9	30.0	69.2
2	10	5	9	8	50.0	88.9
3	9	2	10	9	22.2	90.0
4	7	4	15	12	57.1	80.0
5	3	..	3	2	....	66.7
Total	53	18	58	46	34.0	79.3

* Definite and suspicious cases exposed to a definite or suspicious case in the household within 5 weeks of onset in the source case, and onset in the exposed child not earlier than 5 days from first exposure, nor later than 21 days subsequent to the last exposure.

tant large, well controlled field studies published on this problem of the prophylactic value of pertussis vaccine. It was instituted, in fact, to attempt to clarify the conflicting findings in these two investigations. A comparison of the results in this study with those in the Grand Rapids and Cleveland studies, is presented, therefore, in Tables 14 and 15.

TABLE 14

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Comparison of Cleveland, Grand Rapids, and Binghamton Studies
(On Basis of Attack Rates)

	Vaccinated Children			*Control Children*		
	Cleveland	*Grand Rapids*	*Binghamton*	*Cleveland*	*Grand Rapids*	*Binghamton*
No. of children	479	1,815	587	496	2,397	699
Person years	1,109 *	2,268	797	1,069 *	2,307	760
Pertussis cases	70	52	42 †	83	348	101 †
Annual attack rate per 100	6.3 *	2.3	5.3	7.8 *	15.1	13.3

* Data furnished by Dr. Doull
† Definite and suspicious cases

TABLE 15

Prophylactic Pertussis Vaccine Study
Binghamton, N. Y.
Comparison of Cleveland, Grand Rapids, and Binghamton Studies
(On Basis of Household Exposures)

	Vaccinated Children			*Control Children*		
	Cleveland	*Grand Rapids*	*Binghamton*	*Cleveland*	*Grand Rapids*	*Binghamton*
No. of exposures	73	83	44	62	160	46
Cases resulting	56	29	17 *	61	143	39 *
Per cent	76.7	34.9	38.6	98.4	89.4	84.8

* Definite and suspicious cases

It should be kept in mind that there are certain differences in the manner in which these three studies were conducted. The more important of these relate to the preparation of the vaccine, dosage, and children used in the study. The Grand Rapids and Binghamton vaccines were supposedly identical and both prepared in the Michigan State Health Department Laboratories. The Cleveland vaccine was also a Phase I vaccine containing 10 billion organisms per ml., but in its preparation the organisms had been washed once with distilled water, while the Michigan vaccine had been washed once with saline. The dosage in the Cleveland and Binghamton studies was the same, while in the Grand Rapids study, 4 instead of 3 weekly injections were given with a total dose of 7 ml. instead of the 8 ml. in the other two studies. In the Cleveland study only children between the ages of 6 and 15 months were used, and there was the further stipulation that there had to be an older susceptible child of school age in the family. In the Binghamton study children 6 months through 4 years of age were used, and in the Grand Rapids investigation the children were between the ages of 8 months and 6 years. In neither of the latter studies was it required that there be a susceptible child of school age in the household.

Table 14 is on the basis of cases per 100 person years of observation, and shows that the Binghamton results are somewhat inferior to the Grand Rapids results, but that in both of these studies

there is a significant difference in the pertussis attack rates in the control and vaccinated children, in contrast with the Cleveland study. Table 15 is on the basis of cases following household exposure, and shows the comparability of the Grand Rapids and Binghamton results in contrast with the Cleveland experience.

SUMMARY AND CONCLUSIONS

A field study of the prophylactic value of a Phase I pertussis vaccine, was conducted in Binghamton, N. Y., from January 1, 1939, to November 1, 1940. The study involved 587 vaccinated children and 699 control children, aged 6 months through 4 years. During the period of observation the pertussis attack rate was more than twice as high in the control group as in the vaccinated group, and the cases of pertussis which did occur among the vaccinated group were distinctly less severe than those which occurred among the control children.

ACKNOWLEDGEMENTS—This study was made possible only by the generous and unselfish coöperation of so many individuals that it is impossible to give proper credit to them all. We are particularly grateful to the Michigan State Department of Health for furnishing the vaccine; to Drs. Pearl Kendrick and James A. Doull for their advice during the investigation; to Drs. Bascom Johnson, Jr., and Stafford M. Wheeler, who served during part of the study as epidemiologists; to Dr. C. J. Longstreet, Health Officer of the City of Binghamton, and Dr. Mary Ross, in charge of Binghamton's well baby clinics; to Morton Robins who helped in the statistical analyses; and to the local and state nurses and laboratory workers who helped in the investigation.

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The Private Public Health Nursing Agency in the Defense Program*

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FOR many years the program of the private public health nursing agency has gone on, practically unchallenged. It has had the strong support of leading citizens. Its program has remained the same. Major changes have been few. Recently, however, public funds for support of public health have become increasingly available, not only to expand service into areas hitherto unserved, but to expand the official agency program itself. In some localities consideration is being given to the possibility of the public agency taking on the bedside nursing service—the traditional province of the private group—in order that only one nurse will serve the family. The need of a private nursing agency as a separate entity is being seriously questioned in such places.

Coupled with this shift of program comes the demand for nurses by state and federal governments; and in some of our large cities such an apparent shortage of nurses has developed that many agencies and institutions are finding it decidedly difficult to staff their units. Most nurse administrators are noticing an increasing unrest among the members of their staffs—particularly in the private agency.

In the face of this situation it is well that we ask ourselves what the function of the private agency is today. Does it have a real contribution to make to the defense program as well as to community health, which justifies its demands on the contributor—who in addition to facing greatly increased taxes is besieged on all sides for contributions to a multitude of worthy causes? Can it justify the employment of nurses when the demand for them is so great elsewhere?

In the past we have stated our functions as follows:

1. To supplement but not duplicate the service of the official agency, working under its leadership and planning with it on a community basis. In most communities this has meant chiefly a program of bedside care, with a varying amount of health supervision of individuals or families, selected usually from a morbidity service intake.

2. To use the service for field experience for students of public health nursing. Most large private agencies have considered the preparation of students as secondary only to their community service program.

3. To study and develop new methods and services, since private administration gives flexibility to the use of funds.

4. To develop a lay public that is educated, through active participation in the service, to an appreciation of the values of public health, so that it will work for the maintenance of community service adequate both in quality and quantity.

These functions are time-honored in theory, but actual practice has seldom measured up. Too frequently we of the

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private agencies have felt that official leadership was not of a quality which deserved our coöperation, and instead of working to improve it we have sought many times to take over activities it should perform. We have only ourselves to blame if in some communities today, as the public agency has come to be more financially secure the private agency is looked upon with suspicion, as of doubtful value; and the contributions which we see ourselves able to make are regarded without great enthusiasm.

In the light of the present situation, these functions of the private agency will be discussed separately.

THE SERVICE PROGRAM

For many years the National Organization for Public Health Nursing and the American Public Health Association have stated that in any one area there is usually need for only one public and one private public health nursing agency. The defense program would seem to demand from each of us stringent economy, and to require each community to make community self-evaluation and planning its first duty. Whether the initial request for this comes from the official or the nonofficial group is of far less importance than that the effort be sincerely made. When wise leadership and professional integrity are present and agency prerogatives submerged, relative values as to service needs are readily recognized, and the precedence of basic needs over "frills" is insisted upon. Luxury service will not be allowed to absorb nursing time even though income from well invested funds is available for that purpose, until all essential professional needs are met throughout the country. The first obligation of every private agency today in the defense program, therefore, is to promote such a community study and to insure a wise, economical use of nurse power.

Our second obligation arises out of this. Having merged our private agencies, at least, into one administrative unit in each area, we have a tremendous need to study details of service itself; and, with the health department and all other groups concerned, to determine the order of importance of service needs and how they shall be met. Such joint planning on a community basis will in most areas show that many of the unmet needs arise from a lack of just this type of community planning and can be met much more adequately with the same staff if an inclusive, over-all plan is developed. For the visiting nurse service this will mean a review of its entire intake policy in the light of local morbidity and mortality statistics, and will in most communities show a need for at least three definite developments if the community is to be well nursed and nurse power conserved.

COÖRDINATION OF HOSPITAL AND HOME CARE

First is the need to tie hospital and home nursing care together into a coordinated unit through carefully worked out, written coöperative agreements, by which certain types of patients will be automatically referred to the visiting nurse service with medical orders for home follow-up. In New York City a plan has been developed under the leadership of the Department of Health, which calls at present for referral of clinic patients of the following types: antepartum patients, premature infants, and those in the neonatal period, rheumatic fever patients, and other children with cardiac conditions while convalescing at home. Other types will be included as our study progresses. Under this plan the visiting nurse service makes one visit to each patient reported and on that basis selects patients most in need of further care. Its health supervision load is drawn, therefore, not alone from its morbidity service but from those types of patients for which

local vital statistics show the greatest need for service.

Since in New York City the indigent sick secure medical care largely from the hospitals and clinics, no plan for selection can be made except as hospitals and their medical directors are brought into it actively. So long as the private agency serves only those who know how to ask for care, and does not go out after the patients who most need that care, it cannot claim to be administering its service as a public health agency. The amount of free work that the various visiting nurse services throughout the country can do differs considerably, but the need for constant reëxamination of intake policies so that the free work done will best meet public health needs is evident.

CARE FOR MIDDLE-INCOME GROUP

Second, a study of the community public health nursing program will in most instances show that the middle-income group of citizens sadly lacks nursing care when ill at home. Usually they neither need nor can they afford full-time nursing service. Frequently, however, these patients do not understand the use of the part-time pay service that the visiting nurse service has to offer, and an active promotion program is needed, at least in the larger cities. This involves a carefully worked out plan with both the hospitals—the semi-private and private services—and the organized nursing groups. In New York City, we have found a great need for home care following discharge from hospitals for the semi-private group who carry hospital insurance, and who are almost entirely unknown to social service. While these patients have met their hospital costs through insurance, their medical bills often mount to a disastrous sum, and the need for guidance in budgetary planning is frequently second only to actual nursing care needs.

At the Henry Street Visiting Nurse Service the part-pay and full-pay service in the last year has increased 30 per cent and we are making great effort to give it wide publicity and adjust administratively to its demands, in various ways, such as extending service into the evening. As might have been expected, we are finding the need for intelligent nursing as great here as in some of the less privileged homes. Care must be taken to see that this service does not encroach on the free service, however. This necessitates clear thinking by the board of directors and a recognition of two separate divisions in the budget—that for free care limited by the contributions secured for free work, and that for paid care adjusted to the fees received. Service by nurses is generalized, but growth of each service, speaking from a budgetary standpoint, is governed by different factors.

SERVICE TO INDUSTRIES

Having seen to it that the intake policies are based on an intelligent community plan, statistically guided and economically administered, the private agencies in many sections of the country will in addition be needed to supplement official efforts in safeguarding the health of the industrial worker. It is expected that the department of health will study industrial health needs and supply an advisory personnel which will assist local industries in the development of health services. In industries having defense contracts pressure is already great, the incidence of accidents and illness is increasing, and employers are eager to do all that is possible to keep employees at work. Well qualified public health nurses are needed for such services and the private agency can make a real contribution by preparing and then freeing its own staff nurses for such work. In the case of small industries that cannot afford or do not need the full-time services of a nurse, the agency can consistently sell service

on an hourly basis at cost. A number of communities have already begun to offer such a program to industry and the sale of nursing service by visiting nurse associations is slowly growing.

In New York City, with the approval of the Health Commissioner, the Henry Street Visiting Nurse Service sells such service to the plant at cost, and its nurses are finding the opportunities for health instruction so real that they are grateful for the privilege thus afforded. In addition, requests from employers for contracts with the nursing agency to care for employees when sick at home are increasing rapidly, necessitating a real effort in our staff education program to strengthen the content of our adult health supervision visits. About one thousand such contracts, either direct or through group insurance, are in force at present in the Henry Street Service.

So, in this emergency, we still adhere to our first historical function—that of supplementing but not duplicating the official agency's program; taking pride in being a necessary part of the community plan; respected, we hope, by our coworkers because our sense of values is guided by a public health knowledge of community needs, and not by agency consciousness.

PROFESSIONAL EDUCATION PROGRAM

Although at all times the private agency has afforded valuable field experience for inexperienced public health nurses, perhaps there has never been so great a need to supply it to such large numbers of new workers as there is at present. When this summer the U. S. Public Health Service decided to employ over a hundred nurses, it was the private agencies who largely furnished this personnel—and rightly so. For over the country as a whole the public agencies have need of every experienced staff member if essential community services are to be maintained. If inexperienced nurses must be employed immediately for replacement they can probably be assimilated more rapidly and effectively by the private group with its bedside program and long experience in training than by the average public agency. Moreover, if we as a group believe in public support for health work, we should care intensely that the highest possible civil service standards be maintained, and be ready to make any sacrifice necessary to assist in recruiting a well qualified personnel.

Since defense industries and extra-cantonment zones represent the most difficult types of pioneer services, we must plan to release experienced staff members. There is no place here for the poorly adjusted, inexperienced, restless nurse, and we have as definite a responsibility to keep her from applying as we have to urge the right type of nurse to go.

At the Henry Street Visiting Nurse Service, the Nursing Committee and Board of Directors recognized this and approved a plan involving the following steps:

1. A plan was to be developed to release the maximum possible number of experienced nurses for government service and still maintain a satisfactory quality of service locally. This involved a study with each staff member of her stage of development and a mutual recognition of her individual place in the plan. It was decided that those released to the government should have had at least 3 years of supervised experience, should have completed 1 year's study in public health nursing theory, and should be mature, well adjusted, dependable workers. It was considered equally important to select those who would remain in the organization to carry the service load and continue actively with their preparation, while assisting with the induction of our increased number of trainees. It was thought that a maximum turnover of 100 such nurses could be handled each year so long as the emergency exists, which just doubles the usual rate.

2. The plan next calls for enlargement of the recruiting and staff development program so that replacement with a basically sound

young group will be assured and the quality and quantity of community service be maintained.

3. Provision of additional funds is necessary so that the community service program can be kept stable. It was recognized that an inexperienced staff nurse during her first year of service with us is only about 80 per cent as effective as a nurse in her second and third years. Therefore, every 5 seasoned nurses who leave are to be replaced with 6 new ones, with supervisory and clerical service increased in proportion. Believing that this is a real contribution to the defense program—for no program is any stronger than the caliber of its staff—the Board of Directors voted to meet this increased cost from capital funds, if necessary. Such expenditures will be separated from current running expenses, and studied as to their effect on visit costs.

It was agreed that in so far as possible, staff would be released under this plan *only* for defense purposes and to those sections of the country which, through lack of professional personnel, are themselves unable to provide workers for their increased needs. This involves discouraging our staff from taking positions with certain types of agencies which are not carrying essential services, or from going to communities where there is no conscious effort to avoid duplication and to use economically the nurses already available locally. In the first few months of this plan we have released 22 on a leave of absence for defense work, and many others regard themselves as on call.

The success of such a plan, however, depends on the complete coöperation of the entire staff, so that each member settles down, recognizes her function in the agency as a teacher of the new group and a stabilizer of the service, and accepts the necessity for growing up in public health as rapidly as possible. If quality service is to be maintained locally it means a double responsibility for each supervisor, who sometimes has to be helped to see that her contribution to the national defense program will be as great if she remains to assist in the training program as if she herself volunteers for the greener fields that are calling. Upon the administrative group devolves the difficult problem of keeping the group steady and of maintainnig a sense of proportion. To speak realistically, however, we were faced early in 1941 with restlessness and an increased turnover anyway, and the plan described has been our answer to the question of whether we would try to guide this constructively, or have a turnover of inadequately prepared workers that upset our local service but contributed little to the total defense need. Only time can prove or disprove its wisdom.

In the discussion of any program of field experience it seems fitting to remind ourselves that the contribution which a private agency is able to make is directly related to the order which that agency has brought to its own house. For its value as an experience for new staff surely is small unless the nurses who work there see a community program functioning properly and the private agency's work effectively integrated into it. For too many years private agencies have emphasized in their training programs perfection of technic and routine methods of work, to the neglect of development of a worker who could plan for herself, possessing a sense of relative community and professional values as to what must come first in a crowded program. Too often the staff nurse saw expressed in the attitude of her administrative superiors a feeling that the official program, personnel, and performance were weak, and too seldom did she see in action a generous aggressiveness attempting to inculcate leadership where it rightfully belonged if it did not already exist there. Nurses do not learn coöperation and community planning by hearing it discussed in the classroom. Rather, they learn it by seeing it functioning in practice.

STUDY OF NEW METHODS

With a shortage of experienced public health nurses and a conviction that nurse power must be conserved for nursing needs, we face today the urgent question of the place of other workers in our program—of the practical nurse, the nurse's aide, and the slightly trained volunteer. Where and how can they be used without jeopardy to the safety of the patient? Must every visit now made by a public health nurse be a public health visit? If not, at what spot must service be picked up again by the public health nurse? Certainly, there are no definite *types* of patients who can be turned over to the nonprofessional group—such as the chronic or the convalescent patient—for we know how conditions within each family change. Because our bedside care program lends itself to such experimentation, we have a challenge to try out new ways by which we can conserve our supply of professional nursing through every possible use of other workers.

This coming winter should see us actively engaged in such studies. We must admit at the outset that our standardized picture will be greatly changed and perhaps the cost of visit increased. For if some of the routine of the visits is removed from the nurse's day, will not the remaining visits be longer and will not the time required for making contacts with physicians, for referring to social agencies, and for record-writing increase? What of the cost of supervision? No one knows the answer at present, but no one will deny both the importance of the problem and its complexity, and the necessity that the answer found shall fit correctly into our total future plan for community nursing.

EDUCATION OF THE LAY PUBLIC

In regard to our fourth historical function—that of educating a lay group to understand and support public health programs—the present situation offers a good test of the success of our past efforts.

Because of the lay workers' control of the private agency through fund raising and actual administrative participation, we have always claimed that their opportunities to learn sound public health principles and practice were greater in the private agency than in the public agency. Today we public health nurses in private agencies can well ask ourselves what we have taught our lay committees and board members, and question how they are going to rise to the emergency that faces us. Can they pull their weight in this need for changing our pattern? Do they know and believe in good administrative practice so that in some instances they will even force our steps, when reluctant, into the paths of community coöperation? Here is our chance to learn whether we really prepared them for this broader field of community service and to evaluate our own philosophy in terms of their action.

SUMMARY

So, we maintain that for each private agency, in each community, the first step in finding its place in the defense program consists in bringing about a community evaluation of the total public health nursing program, so that we conserve our supply of personnel and are able not only to provide for present needs but to maintain high professional standards as defense programs expand.

Never were we as a group faced with a greater challenge, and our success may in great part be evidenced by the degree to which the coming months bring an actual reduction in the number of private agencies through merging of community groups. Appraisal at a future date should show that, resulting from this movement, came a strengthening of programs because of an increase in funds released for community service

through a saving in administrative costs, as well as a freeing of personnel for expansion into areas sorely in need of the public health nurse. Unfortunately, there is much more to be done than there are qualified workers available to do it, and a sound administrative policy must be developed to make the best use of every member of our profession. To attain this in practice throughout the stretch of this country is the most important job of the private as well as the public agency at present. There is no need to change fundamental professional principles. The need is to make practice, long reluctant, more consistent with these principles.

It is time that each of us pause and remember that we are first of all public health—not agency—workers, and that as a group we stand together, regardless of the type of our employment, firm in our belief in the contribution which our profession can make to human welfare, and convinced that teamwork is more highly prized as our tool than is any skill symbolized by the time honored black bag.

Is There Need for the Fortification of Milk?*

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IN discussing this question it is unnecessary to dwell upon the variation in the nutritive value of milk as affected by summer and winter feeding. That there is such variation to a demonstrable degree is well known, but present-day practice in the management of dairy herds is such that the health of the cows and the flow of milk throughout lactation is rather generally maintained at good standards. There is sufficient evidence that ordinary milk as sold in cities is of uniformly good nutritive quality. The numerous experiments on animals and the dietetic studies on children in which the merits of milk as a supplemental food were demonstrated were, with few exceptions, conducted with ordinary market milk. Such studies, together with the well known fact that in the feeding of infants and young children milk is quite indispensable, have fully justified the statement that milk is the one food for which there is no effective substitute.

VALUE OF MILK IN THE DIET

With the exception of the bottle-fed infant, when milk diluted with water may for a brief period form the sole food, milk is never employed as the sole source of nutriment. The specific contributions of milk are calcium in amounts not readily obtainable from other foods, enhancement of the biological value of the dietary proteins by reason of the high content of certain essential amino acids in milk proteins, and vitamin A and riboflavin in particular among the vitamins. Milk is the most important of the protective foods from the standpoint of improving the quality of the diets ordinarily selected by individuals in the Western Hemisphere.

The value of a generous quota of milk and other dairy products in the human diet is not so apparent in a country where people eat as wide a variety of good foods as is the custom with the majority of Americans whose economic status is satisfactory, as it is, for example, among the different racial groups of India, where lack of transportation, agricultural limitations due to soil and climate, taboos, religious principles and prejudices, have determined that large groups of people subsist upon simple and monotoncus diets of very different qualities. The diets and the physical characteristics and health standards of several racial groups in India have been described by McCay, McCarrison, Aykroyd, and others. The basis of all of these diets is cereals, pulses, vegetables, fruits, and milk. Quantitatively the variation in the consumption of each of the classes of foods

* Read before the Food and Nutrition Section of the American Public Health Association at the Seventieth Annual Meeting in Atlantic City, N. J., October 14, 1941.

of vegetable origin is great, and that of milk enormous. The poor Bengali who eats rice together with dahl (a legume seed), vegetables and oil, with a little fish, is of inferior physique. The same is true of the Madrassi, whose staple diet is rice, and who takes no food of animal origin. On the other hand, the Sikhs, the Mahratta, and the Pathan peoples are pastoral in their mode of life, and include very liberal amounts of dairy products in their diets. All of these peoples are described as of superior physical development.

The consumption of an adequate quota of milk products is imperative to make our type of diet fully adequate for the maintenance of a high standard of health. This point is especially in need of emphasis at present, when enthusiasts over fortification of foods are saying a great deal about the extent of malnutrition in the United States, and promoting the belief among the uninformed that our resources in foods presently available are not sufficient and that we need to improve various items in the dietary in order to safeguard health. The errors in eating habits of our time lie in the wrong selection of foods from among our available products. The causes are principally due to poverty or ignorance or indifference. There seem always to be some who do not want to be saved.

FORTIFICATION OF MILK WITH VITAMIN D

For many years health officials, with a view to safeguarding milk against the dangerous human contacts which may infect milk and bring about epidemics, urged the adoption of ordinances prohibiting the subtraction from or the addition of anything to market milk. This practice became general and was a great safeguard of consumers. The first relaxation of this standard of practice which occurred with the approval of organized medicine and other public health officials was that of permitting the sale of market milk fortified with vitamin D. The advent of vitamin D milk was the result of very special conditions. After the announcement in 1922 of the discovery that there existed in certain fats and oils a vitamin which exerted an extraordinary influence on the maintenance of the normal phosphate ion content of the blood, facilitated to a remarkable degree the absorption and retention of calcium and phosphate ions, and regulated the calcification of growing bones—in other words, protected infants and children against rickets, then exceedingly common in temperate regions—the newly discovered nutrient designated vitamin D was enthusiastically proclaimed by the pediatricians. They recognized that here was a discovery of fundamental importance to the public health. Distinguished medical men at once recognized that this vitamin should be provided to all infants and children living under climatic conditions which contributed to the prevalence of rickets. It was agreed that a method for its distribution was desirable, which would insure that the largest possible number of infants and children would receive it in adequate amounts for prophylactic purposes without reliance upon a prescription by the physician or upon the solicitude of the parents to secure it through the drug store. It was generally agreed that milk was the food of choice to serve as the carrier of the vitamin. With few exceptions vitamin D milk has had the approval of health commissioners as well as of the medical profession, and it is apparent that it has come to stay. The prevention of rickets in children constitutes one of the great achievements in safeguarding the public health. It was, however, only because of the unique situation presented by the fact that vitamin D is indispensable to the protection of the health of an infant, and by the further fact that none of

our common foods contain the vitamin in sufficient amounts—facts which necessitate obtaining it from some source not readily available to the general public—that the rigid requirements of milk ordinances regarding additions to milk were relaxed.

SYNTHETIC VITAMINS

But we have recently seen astonishing development in certain of the food industries owing to the availability of low cost synthetic vitamins or concentrates made from natural products. During the past thirty years spectacular discovery followed spectacular discovery in nutritional research. Hitherto unsuspected nutrients were brought to light in rapid succession. Their absence, or their occurrence and relative abundance in each of the more common foods, was revealed by experimental studies. The nutritive needs of the body in quantitative terms as respects each of the known nutrients were studiously inquired into until we now have a most valuable body of knowledge concerning these matters. Experimental studies with many combinations of foods in different proportions revealed combinations which sustain optimum nutrition, and others which lead to impairment of the physiological status in different degrees. Such results were amazing to a generation of biochemists and physiologists who had been taught that a suitable mixture of protein, carbohydrate, and fat, together with a not well defined list of inorganic elements, would be sufficient to nourish a mammal satisfactorily during growth and throughout life. Pictures of animals suffering from specific malnutritional states dramatized the new discoveries and aroused the public interest. The deductions from animal experiments that certain human diseases which were widespread were due to dietary inadequacy—beriberi, scurvy, rickets, nightblindness, pellagra, etc.—aroused the greatest interest of both the medical profession and the consuming public. The promise of better health through right eating was kept before the public, which became nutrition conscious to a hitherto unprecedented degree.

Discovery of the dietary properties of individual foods inevitably placed some in more, and others in less favorable positions as respects their contribution of essential nutrients to the diet. Inevitably those who sold foods for which nutritional research had facts pertinent to good sales talk played up the merits of their products in every way possible. It was good business. Those who dealt in products which science said were among the more deficient foods in essential nutrients were in low spirits, believing that their industry was being hurt, and that worse was yet to come. Time, however, brought other surprises which changed their mood to hopefulness and expectation.

As soon as a new vitamin was discovered, efforts were made to isolate it in a pure state. This accomplished, attention was turned to increasing the yield of an isolated vitamin from natural products. Soon enough of it was available for the organic chemists to apply their technic for discovering the structure of its molecule, and soon thereafter for synthesizing it. Within the past few years certain vitamins have been manufactured on a large scale and their cost has been greatly reduced. There are two great fields open for the exploitation of synthetic vitamins—through the drug trade and through their addition to foods. Both of these outlets are being vigorously promoted. Retail drug trade in vitamin preparations has now reached the proportions of big business. In the September 15, 1941, issue of *Barron's*, the national financial weekly, the following statement appeared:

> Meanwhile, that busy group of companies engaged in selling vitamins to the trade, is continuing to expand sales of its product. Ten years ago, retail sales totaled around

2 million dollars a year. In 1939, the last year for which figures are obtainable, retail sales in drug stores reached 100 million dollars. Currently, they are believed to be much higher.

It appears that almost every one interested in the sale of a food which is deficient in one or more nutrients has day-dreamed about adding the missing substance with a view to increasing the sales appeal. Until quite recently they were all deterred by the high cost of synthetic vitamins and concentrates, but they are no longer too costly to warrant testing out the industrial possibilities of their addition to foods. Accordingly we are witnessing the adoption of restoration of vitamins and minerals removed in the milling of cereal products, the so-called "enrichment" of flour, and the fortification of fats and oils used in the mnufacture of butter substitutes with vitamins A and D. There is some discussion of the vitaminization of sugar.

These more or less general statements about foods and nutrition were intended to be prefatory to more specific discussion of the problem of fortification of milk. They seem justified because they illustrate the movement toward "improving" deficient foods.

FORTIFICATION OF MILK

Milk is low in iron, copper, manganese, and rapidly loses its content of ascorbic acid after it leaves the cow, and contains very little of it when pasteurized. It is not, therefore, a complete food when it serves as the sole source of nutriment over a considerable period. Many inquiries have been made concerning the proposed advantages of fortifying milk in various ways such as "mineralized milk," "vitamin C milk," or milk fortified with several vitamins and inorganic elements. It has been proposed to add carotene to milk to make winter milk of the same color as that obtained from cows on green pasture, and at the same time increase its potential vitamin A value. It is evident that some distributors have supposed that there may be enough sales appeal, and increased nutritive value in such so-called "improved" milk to warrant putting it on the market. At present in one city there is being distributed a milk fortified with five vitamins and certain mineral elements, and with the approval of the health department.

If we accept the view that it is easily possible to plan fully adequate diets using only natural foods, it would seem that we should do well to rely on these rather than to encourage separation of the components of cereals and then partially restore the essential nutrients removed in refining. It would also seem to be a safe conclusion that, all things considered, the fortification of vegetable fats and oils to bring them into competition with milk fats, whether in the form of fluid milk, cream, butter, or cheese, is of doubtful expediency. This is especially true from the standpoint of the farmer who produces milk. There are many vegetable foods which are so rich in carotene that when dairy products are included in the diet in amounts sufficient to supplement it in other respects, it is easy to raise the provitamin A intake to a generous allowance without making use of fortified fats in human diets. Carrots and tomatoes are examples of rich sources of carotene.

Valid reasons for discouraging the enrichment or fortification of foods with vitamins or minerals or both are, first the item of cost, and second the complications which will arise in the planning of dietaries when restored or fortified products are purchased along with natural foods. It is uneconomical to take foods apart and then recombine certain components, and it is an economic waste to include in the daily menus more than the actual requirements of any vitamin or mineral, except

under conditions when the body stores have become depleted.

The common sense view seems to warrant the conclusion that it is unwise to permit fortification of milk other than with vitamin D. It is unnecessary in the interest of the consumer and undesirable from the standpoint of the distributor. The sales value of a line of special milks, mineralized or vitaminized, is still undetermined, but it would appear that if such products are purchased by those who are adhering to wisely planned diets they will be buying something that they do not need and so spending extra money to no good purpose. It would be more advantageous for a family to buy more ordinary milk than to buy a lesser volume of so-called "improved" premium milk. Any fortified milk must be a premium product since its production will be expensive. If the sales volume of such milks remains small, or falls after being built up by advertising, as has often been the case in the past when special dairy items have been promoted, the distributor may find that he has an incubus on his hands. He cannot easily drop such items so long as even a small number of customers continue to ask for them, and the cost of preparing a few units for distribution may result in loss.

It is believed, too, that if milk distributors yield to the temptation to follow the trend of the times and put on the market fortified milk, and give it the publicity necessary to create demand, they will be doing a disservice to their customers by creating a belief that ordinary milk is not the superior food that it has been extolled to be, and that it needs doctoring to make it a desirable item for the consumer to purchase. Every nutrition authority during the past twenty-five years has lent the influence of his reputation to the proposition that ordinary milk is a superior food and an economical purchase, that it is the best single supplementary article of diet among the protective foods.

Now to promulgate the idea that milk improved in one way or another is preferable to the natural product is misleading to the public. It will create confusion in the public mind, and in the long view is an unsound policy from any viewpoint.

No one has ever recommended that milk shall be used otherwise than as one component of an otherwise well selected diet in America. In its natural state it possesses the outstanding properties we desire as a supplemental food. It is not recommended as a source of iron, copper or manganese, or ascorbic acid, which nutrition authorities all agree should be secured from other sources. There is no advantage whatever in making any single food a complete food for all nutritional purposes. We have a great variety of appetizing foods and we will fare best by taking a variety of foods, each of which provides something which is needed.

Quite apart from any nutritional consideration, it seems undesirable to permit fortification of milk other than with vitamin D on account of the burden which such practice would put upon health officials. Constant inspection and assaying would be necessary in order to insure that such special items are what they are stated to be. If every distributor were to sell fortified milk, the burden of official supervision would become very great, while the service rendered and the expenditure involved would be of doubtful value.

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PROSTITUTION IS AN AXIS PARTNER

IN the week beginning Monday, December first, we read *Plain Words About Venereal Diseases*, by Thomas Parran and R. L. Vonderlehr, respectively Surgeon General and Assistant Surgeon General of the United States Public Health Service. Also we read and listened to the repercussion and controversy which followed in the wake of this book's publication. By the end of the week we were preparing an editorial which possibly would have prolonged the argument, but the events of Sunday, December seventh, changed all this. There is now no time for deciding whether or not the Army has been lax in enforcement of the provisions of the May Act for repression of prostitution around military establishments; and neither is there time for deciding whether or not the blunt criticisms by the authors of this book were in good taste or along proper governmental channels. In the face of the present situation these matters become academic and must be thrown into the discard with other fine-point disputes which we thought we could afford when we were preparing somewhat leisurely for defense.

From here on, in matters relating to the public health, the offensive must be taken just as it must be gained in military and naval affairs. It follows then that a new hard-hitting and planned attack must be launched. In regard to venereal diseases, as they relate to the military and naval forces, the following premises, numbered one through five, appear to lead logically to the conclusion set forth below as number six.

1. The venereal diseases have always been a menace to the health and efficiency of soldiers and sailors.

2. Prostitution is the great reservoir of venereal disease.

3. Evidence at hand indicates that prostitution has been flourishing in many areas near military and naval establishments.

4. Unless some unknown and strangely protective new factor has entered into the situation, prostitution existing near naval and military establishments is a menace to the health and efficiency of the Army and Navy.

5. The May Act, signed by the President on July 11, 1941, prohibits prostitution within such reasonable distance of military or naval establishments as the Secretary of War or the

Secretary of Navy, respectively, shall determine to be needful to the efficiency, health, and welfare of the Army and Navy.

6. The May Act should be enforced quickly, effectively, and continuingly, without recriminations, hair-splitting arguments, or gloomy forebodings as to usurpation of state and local authority by the federal government.

Let's give neither aid nor comfort to the enemy.

VERTICAL VERSUS HORIZONTAL ADMINISTRATION

IT is interesting to observe that an increasing number of public health workers are becoming conscious of a need for more clearly defined administrative relationships between themselves and their coworkers, between the individual service units within their organization, and between their own organization and other organizations. Even more significant is the fact that many of those who were once unrestrained and vehement champions of one method of administration or another are now, as their programs have expanded and their responsibilities changed, willing to see some virtue in types of organizations and methods of administration which previously they had damned roundly. This developing interest and this new tolerance may be put to good use and perhaps to severe test in bringing about a just peace between the adherents of "horizontal" administration and the proponents of "vertical" organization and procedure. These quoted words, incidentally, are not good terms, but they are generally understood, and for want of better they must be used.

How best to combine the imagination and planned strategy of a technical staff with the stop-gap technics and realities of the firing line is not, of course, a new problem or one confined to public health. It is encountered in industry, in business, in the military services, in hospitals, and in fact in any situation where there is a central directing group of specialists on the one hand and on the other far-flung operations of the organization as a whole, under the immediate charge of local directors. In public health administration the objective, naturally, is to provide a smooth and untortuous channel along which the knowledge and facilities of the central organization may flow to and through local units without washing away that authority which the local director must possess if he is to perform successfully. Complete autonomy of the local units, say in the director of a city district or in a county health department, tends to inhibit the flow of technical service and advice from specialists in the central office to their corresponding specialists or technicians serving in the local units. As against this, to have special services of an operating health department, as in tuberculosis or public health nursing, directed by bureau chiefs in a central office, interferes seriously with coördination of the various activities of the local unit and makes it impossible for the director of that unit to function other than as an administrative clerk. Personalities, too, and guild consciousness of those in the many professions or near professions of public health, and even the respectable urge to do a good job of work, seem to have added confusion to this already difficult problem.

No wise man will speak ex-cathedra on this subject, and the more emphatically one argues for either complete vertical or complete horizontal administration the more likely is he to be in error. Central bureau chiefs and the services which they and their staff render are largely concerned with what to do and how to do it in their respective fields. The local director is responsible not only for insuring high

standards in what is done and in the way in which it is done, but also he is the only person in position to decide where to render local service and when and to whom, with the personnel and resources locally available. No victories are won with only staff work, be it ever so brilliant, nor with only tactical officers, be they ever so energetic. What, seemingly, is needed in public health administration is an organization and procedure which will combine provisions for central technical guidance with assurance of responsibility and authority for the local director. It is not probable that any one fixed pattern will serve all places. Wisdom appears to indicate that the best in vertical and horizontal administration be conserved, harmonized, and utilized.

THE RIM OF THE CARIBBEAN

ONE is inclined, naturally, to discourse upon his or her own recent experiences, provided they are reasonably respectable, and we claim no exception to this tendency. Having just swung around the rim of the Caribbean, we want to talk about it, not as a travelog, but rather from the standpoint of the health work being done in that area. Of course, since our progress was a somewhat rapid and centrifugal one, we are not in position to speak authoritatively or in detail, but in spite of this we did gain an impression as to the health problems and practices of some of the countries bordering on the Caribbean.

In these countries one finds still a strong and necessary interest in the fundamentals of sanitation: anti-mosquito work with all this implies for control of the various genera and species with their divergent habits and sometimes seemingly bizarre choice of breeding places; excreta disposal with the programs ranging from squat-hole type of latrines to municipal sewage plants and on to wearing-of-shoes campaigns; small and large water supplies, abattoirs, and meat markets, garbage fills of low ground, and village incinerators—all loom large in these intensive and widespread sanitary programs. Superimposed on such fundamentals are efforts to carry on the more or less conventional public health activities seen in a more or less conventional health department in the United States. And over and above these things are to be seen services which reflect local problems: research and field work in schistosomiasis, in dysentery, in hookworm, in production of anti-venom serum; the far-flung listening posts of yellow fever control, made up of viscerotomy services in Venezuela, Colombia, and Panama; the undertakings to meet problems arising from the establishment of the defense bases of the United States in some of these countries.

One sees, too, on most of the rim of the Caribbean, strongly centralized health departments, where complete authority and financial responsibility rest with the central government. The director of the national or federal division of tuberculosis or maternal hygiene, for instance, is not found in an administrative office, but in a clinic rendering direct service to citizens who live near the seat of government. This, of course, strikes a North American visitor as unusual. One is inclined to wonder if a federal chief of service, so preoccupied in direct local activities, can possibly have time for or an interest in the complex problem of providing that service on a nation-wide scale. Yet this close touch of chiefs with the realities of action is refreshing, and certainly is not to be criticised merely because it is strange. In some of these countries, but not all, serious attempts have been made to extend public health work through a health unit system. Quite in contrast to North

American sequences and associations, many such units have come into existence by being engrafted upon an already existing dispensary service or are the result of the pulling together, locally of special diverse services of a federal department of health which previously had operated independently of each other in that locality.

Unfortunately, in Caribbean countries, few medical men have made public health work a career. The physician who enters the health service, in most instances regards his term of office as temporary, and this attitude is shared by his colleagues and the governmental authorities. Though a number of men have received postgraduate instruction in public health, full-time service is unusual. Perhaps if, in the matter of career work, the United States had set a better example, it would have benefited the health services of these countries to the south of us. But let it not be imagined that the flow of public health knowledge must necessarily be from north to south. There is an enthusiasm, an energy, and a realism in the public health work of the Caribbean from which North Americans may well profit.

Credit Lines

A Selective Digest of Diversified Health Interests

D. B. Armstrong, M.D., and John Lentz, M.S.

WHAT'S THE USE?

These are unhappy times—" times that try men's souls." It is only natural that many of us who heretofore have taken pride in our work and have drawn spiritual sustenance from it, are suddenly asking ourselves: " What's the us? " When war came, we were in the midst of a manuscript dealing with the history of a great experiment in life conservation. At once we felt that this, as well as other undertakings of ours, were innocuous projects having no relevancy to the present scene: the here and the now. We thought, too, of " Credit Lines." Futile to continue it, we felt. What difference does it make whether health pamphlets are excellently written and attractively illustrated? Who cares now whether our posters are nicely designed and competently executed? Then we looked about us and sensed what it would mean if everyone surrendered to bafflement or lost himself in emotional flight. Gradually, we realized that it was unthinkable to surrender to a " what's-the-use " philosophy in times like these. There are many urgent problems in the offing that health workers must solve, and until these new problems challenge us, it is best to continue with the tasks at home. There will be new and special opportunities for service in every phase of public health as long as our country is embattled. Let us be ready to give our best to the difficult and complicated jobs that may be ours to do, so that in the end we may have the satisfaction of knowing that health personnel shared in the triumph of a wise and provident society over one of decadence and perversion.

What's the use? Plenty!

A DAY OF HEALTH EDUCATION

Approximately 100 health educators representing the official and voluntary health, medical, and social agencies in the New York City area attended the second annual one day Health Education Conference, held under the auspices of the New York Academy of Medicine, on November 8, 1941. The program centered around the theme of directing attention to the objectives of health education and the methods and technics best suited to accomplish these objectives. Four very stimulating and enlightening papers were presented that brought out many new concepts regarding the general theme of the meeting.

Dr. Edward J. Stieglitz, of the National Institute of Health, read a paper on " The Rôle of Health Education in Present-Day Medicine " that was a very scholarly analysis of the individual's responsibility for his continued health and of the pressing problems of senescence. Dr. Stieglitz emphasized that health is more than absence of disease and that, although there is no such thing as perfect health, it is an ideal to be approached as nearly as possible. He

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stated that the measurement of health is individual, not general, and involves the prediction of future physical fitness as well as the attainment of present fitness. Dr Stieglitz pointed out that there are two types of preventive medicine, wholesale and retail, the wholesale being the activities of public health dealing with the prevention of exogenous injury, the retail dealing with the maintenance of individual health. The wholesale type has now advanced to a point where the public is protected from many infections through a safe environment and immunization. It is effective mainly without the efforts of the recipient and has affected largely the diseases of youth.

In the retail type of preventive medicine, Dr. Stieglitz maintained that the pediatricians have been the principal leaders, but little advance has been made with the degenerative disorders of old age. The retail method requires health inventories which are much more than routine physical examinations. These inventories involve expense, skillful examiners, and intimacy. They must be voluntary and they require initiative on the part of the individual. Physicians as well as the public must be educated to further advances in the field of health inventories, Dr. Stieglitz said.

Another interesting section of Dr. Stieglitz's paper brought out the fact that no disease can be considered to have but one cause. Etiology was divided into three factors: predisposing, provoking, and perpetuating. The attack against many diseases must be primarily against the predisposing rather than the provoking cause, and the perpetuating must also receive serious attention. The advancing age distribution of the population has caused a shift in the character of the principal diseases from infectious to degenerative. Gerontology, the science of the process of aging, has become an important study and introduces not only new clinical problems but socio-economic problems which demand the coöperation of workers in many fields allied to medicine. The speaker said that at present we cannot hope to add many more years to life, but we can add more life to the years and make longevity a blessing rather than a burden. Man should become, like Oliver Wendell Holmes's "Wonderful One Horse Shay," a well balanced machine in perfect operation until the end. This will make man useful to society in his years of maturity and good judgment, rather than a burden on the shoulders of youth.

Two important points which Dr. Stieglitz particularly stressed were the necessity for increased accuracy in lay medical writing and the pressing need for well adult clinics where information regarding nutrition and endocrine disturbances, among other things, could be obtained.

Selskar M. Gunn, Vice-President of the Rockefeller Foundation, who is now engaged on a project for the National Health Council, spoke to the conference about an experiment in education in rural China in which specialists in social, economic, agricultural, and medical fields were brought together, how barriers between them were broken down, and how they were taken into the field to see their common problems and work out methods for their solution. Thus started on a sound basis, even war and the migration of refugees could not stop the experiment. Mr. Gunn expressed the belief that in the United States socio-economic problems and health problems must likewise be dealt with, as they are inseparable. In attacking a problem, the Chinese first go into the field, learn the facts, then apply the educational technics needed. It was felt that we in this country could avoid a great deal of fumbling if we would first take time to get at the basic facts. Facts first, technics later.

A paper, Psychological Barriers in

Health Education, was read by Edward L. Bernays, well known public relations consultant. This paper stemmed from a study which the author made of health education in the United States at present. He drew a rather scathing picture of what he considered wastefulness in health activities because of lack of coördination. Mr. Bernays pointed out that the barriers to health education are both psychological and physical. The psychological barriers involve the attitudes of health educators, who often are not very efficient, and the attitudes of that part of the public that resents the doctor when well and that is bound down by ignorance, habits, taboos, and prejudices. The physical barriers, according to the speaker, include inadequate budgets, lack of coördination, conflicting claims made in health information published by various agencies, materials that are out of date, etc. Mr. Bernays recommended that a voluntary National Council of Health Educators be formed by all health education groups to pool resources, prevent duplication of effort and needless expenditure of money and to maintain continuing research and evaluation of technics in health education.

Dr. Allen W. Freeman, of Johns Hopkins School of Hygiene and Public Health, gave a direct and forceful paper on Health Education by the Private Practitioner, the Voluntary Agency, and the Department of Health. He maintained that health education cannot become a major part of the practitioner's activity as long as the doctor's bread and butter depends upon his practice, but that it could become a more important part of his practice if he were given the proper point of view in medical school and if it were made easier for him in his practice to educate his patients. Dr. Freeman pointed to the important contributions made to health education by voluntary agencies. He felt that they had been most ingenious in developing methods and in carrying on continuing programs of education. Departments of health, the speaker said, vary greatly in their health education activities — the large cities requiring much more organization than small rural counties. In the latter, health education must be the duty of the health officer, the nurse, the sanitation officer, and even the clerk. The nurse was termed the health educator *par excellence*. Proof of this has been revealed by studies which have shown that the nurse, visiting prenatal patients in the home, carries out more effective teaching methods than some of the best prenatal clinics.

The formal papers were followed by round table discussions, and a general summary of the day's proceedings was excellently outlined by Dr. Henry E. Meleney, of the New York University College of Medicine.

The New York Academy of Medicine and its Committee on Medical Information deserve the thanks and appreciation of all in attendance at this helpful conference.

WELCOME ALLIES

During this time of national emergency, public health personnel is demonstrating more than ever its leadership in democratic procedures by participating in many activities which have a bearing on the health of the nation. The number of professional groups which have something to contribute to the science of healthful living is becoming more and more striking. The National Association for Nursery Education held its Ninth Biennial Conference in Detroit during October, 1941, and the field of public health was well represented through physicians and pediatricians, educators, and welfare workers. The theme of the Conference "Life, Liberty, and Happiness for Children NOW" was and will continue to be of vital concern because emergency measures have made it more necessary than

ever to provide suitable care for the preschool child. The English and the Canadians have given us through their experience numerous reasons why early childhood education is essential to any national program. It is the children who must carry on, and the preschool years are vitally important because of the influence that they bear on the growth and development of a healthy people. A healthy start in life, both mental and physical, is the birthright of every child. Take notice of these nursery school directors and teachers. They need your guidance, and in turn they have much to give which has a bearing on the public health.

HAVE YOU SEEN . . . .

Any issues of the Club Talk Series issued by the Medical Society of the State of New York?

These "talks" are designed to be presented by a lay person at club meetings or they may be used as publicity releases or as radio material. The Series covers a varied list of topics, two of the latest dealing with fear (as a factor in mental health) and with cancer (in which facts about the disease are set forth for school groups). We recommend this series of "talks"—they are replete with sound, fundamental information presented in a popular, appealing manner. If interested, write to the Society at 292 Madison Avenue, New York, N. Y.

The venereal disease pamphlets published by the Massachusetts Society for Social Hygiene, Inc.? (Address 1146 Little Building, Boston, Mass.)

Two publications on gonorrhea and syphilis issued by the Society are especially commendable. One is addressed specifically to the man in uniform and stresses this fact: Here are two diseases you *don't* have to have. The text is straightforward, employing terms and phrases that are used in man-to-man discussions on this subject. The second booklet describes syphilis and gonorrhea as "saboteurs of our national defense." It is likewise a straight-from-the-shoulder exposition in which prostitution, the road house and the tavern are discussed. The two booklets are attractively executed. They bear none of the earmarks of hastily prepared "handouts," which is more than can be said for some of the publications on the subject that have recently been issued for the man in uniform.

Any issues of "Your Health," a bulletin published by the Newton, Mass., Health Department?

This health department is doing an outstanding job in publicizing its services in the community it serves. A recent issue was devoted to the prevention of communicable disease. Immunization procedures were summarized and other methods of prevention were listed and briefly discussed. This is one of the best health bulletins for "home consumption" that reaches our desk.

The fourth booklet in the Workers' Health Series?

"Clara gives BENZOL the run around" is the title. This booklet is a clear concise statement regarding the effects of benzol poisoning and preventive measures that must be taken to avoid it. The text, as is characteristic of other booklets in this Series, is appropriately written for workmen. Available from the Superintendent of Documents, Washington, D. C. Price, *5 cents.*

Volume I, Number I of the National Foundation News?

This four page publication, which follows the newspaper format in layout, is to be issued monthly by the National Foundation for Infantile Paralysis, Inc., for its chapter officers and members

throughout the United States and its possessions. The publication is decidedly "newsy" in tone, reflecting activities of the Foundation in the fields of research, epidemic aid, and education. The initial volume leads us to believe that this publication will soon have a wide circle of interested readers in public health.

The reprint from the American Journal of Public Health of the Proceedings of the Nineteenth Annual Conference of the Milbank Memorial Fund?

Readers who are familiar with this excellent series of papers will surely welcome a bound copy of this material for reference and library purposes. Write to the Fund, 40 Wall Street, New York, N. Y., for copies.

A POSTER PLEA

On more than one occasion, we have "had our say" about so-called modernistic technics and design as applied to health posters. A recent communication to the editor of a popular magazine reveals that there are others who share our general feeling—to wit:

"When I was in New York a while ago I went to an exhibition called Posters for Defense. . . . I am sending you a leaflet from that exhibition. . . . I would like to ask you if you don't think there is something wrong about these posters that are supposed to make a hundred million people feel like defending democracy.

"So many of these posters are machine-like and cold, and so many of them make people look like robots and caricatures. I think I can appreciate the skill and talent that have gone into these posters, but I wonder if skill and talent are enough, all alone, with so little warm human quality to move the man in the street. Maybe abstract design can arouse emotional response in the connoisseur, but can it make the average housewife save her dimes for defense stamps or persuade a mechanic to enlist in the Air Corps? I want your opinion. I would like to know if you don't agree that posters which hope to symbolize the aims of democracy should represent their themes in human, understandable words and pictures, and not in designs that suggest the mechanistic, unsentimental and regimented things we're fighting."

The editor agreed 100 per cent with his correspondent and added: "Let the government put in a hurry call for such human artists as Steichen, Norman Rockwell, etc., men who see with their hearts as well as their eyes."

To which we add: Artists designing health posters—PLEASE NOTE. The comments quoted above apply as well to health posters as to defense posters.

MAGAZINE ARTICLES

"Middle Age Jitters." Raymond G. Fuller. *Cosmopolitan*. December, 1941.

"How to Choose a Doctor." Robert D. Potter. *Good Housekeeping Magazine*. November, 1941.

"The Truth About Caesareans." Maxine Davis. *Good Housekeeping Magazine*. November, 1941.

"How Much Do You Know About Heredity." Amram Scheinfeld. *Ladies Home Journal*. November, 1941.

"The Danger of Nervous Fatigue." Edward Spencer Cowles, M.D. *Good Housekeeping Magazine*. December, 1941.

"Eating for Oomph!" William L. Laurence. *Ladies Home Journal*, December, 1941.

"Was I Dreaming?" Gretta Palmer. *Ladies Home Journal*. December, 1941.

"The Great American Stomach." *Fortune*. December, 1941.

"Sister Kenny vs. Infantile Paralysis." Lois Mattox Miller. *Readers Digest*. December, 1941.

"These Millions Need Not Die." Paul de Kruif. *Readers Digest*. December, 1941.

"Too Much Surgery?" Miles Atkinson, M.D. *The American Mercury*. December, 1941.

JOTTINGS

The request for slogans in the October issue of "Credit Lines" prompted readers to submit the following: All for

Health and Health for All, A Healthy Nation is a Wealthy Nation, Public Health for Public Happiness. Let's have more suggestions. . . . Letterheads can be used to spread health information, as demonstrated by the Newark, New Jersey, Department of Health. The official stationery of the department carries the following message: "Pneumonia Picture: sudden onset, pain in chest, high temperature and chills, shortness of breath, cough and rusty sputum. Call the doctor immediately." . . . Now that the long winter evenings are here, there should be time to read those books you've put aside for leisurely(?) hours. Be sure to include on your list *The Man Who Lived for Tomorrow* (the biography of William Hallock Park), *The Doctors Mayo,* and *William Henry Welch and the Heroic Age of American Medicine.* These are outstanding books —books to chew and digest, not merely to taste and to swallow. . . . Nutritionists have long insisted upon informative labeling of food products. Here's an example of the nth degree of informative labeling displayed in a restaurant: "Hard boiled egg—1 cent; wear and tear on chicken—3 cents; rooster's fee—1 cent; total cost—5 cents." . . . The book department of a large metropolitan store recently was puzzled over the poor sale of one of the year's finest cook books entitled "100 Ways to Please Your Husband." Good cook books always sell well and the merchandising manager wondered what was holding this one down. One of the sales girls suggested that the books be removed from the cook book counter and placed on display in the medical and health book section. The suggestion was followed. Result: "100 Ways to Please Your Husband" was sold out on short order. . . . The Greater New York Safety Council advises all motorists approaching grade crossings: "STOP, LOOK, LISTEN, and *LIVE!* Don't depend on the watchman—or even the gates. Train the mind to mind the train!" . . . We understand that Sister Kenny, although not present in person, largely dominated the discussions on therapy at the 1941 annual meeting of the National Foundation for Infantile Paralysis. It seems to be generally agreed that Sister Kenny's procedures are a revolutionary contribution to the treatment of acute poliomyelitis. . . . Translating scientific material into the tongue of common communication is difficult and the work that some popular writers have done in this connection is to be admired. However, when certain vitamins are referred to as "wham" and "oomph" vitamins, it seems to us that popularization is being carried a bit too far. . . . The Pennsylvania State Department of Health has produced a film for lay audiences on pneumonia, stressing the general rules of prevention and treatment, including home nursing care. . . . The National Foundation for Infantile Paralysis has produced a one reel sound motion picture for lay audiences on the epidemiology and treatment of poliomyelitis. We believe the film will be available in both 35 and 16mm. prints.

BOOKS AND REPORTS

Handbook of Communicable Diseases—*By Franklin H. Top and Collaborators. St. Louis: Mosby,* 1941. 682 pp. Price, $7.50.

Out of the rich and interesting experience of the Herman Kiefer Hospital and the Detroit Department of Health has come this new manual. The first section presents a brief and general consideration of infection and immunity, of epidemiology, of regulations for control, of specific immunizing procedures, of serum sickness, and of nursing technics in the home and in the hospital. Then follows a detailed text on each of the communicable and infectious diseases, presented under the following topical headings: Definition, History, Infectious Agent, Epidemiology, Immunology, Pathology, Symptoms, Types, Complications, Differential Diagnosis, Prognosis, Treatment, Nursing Care, Prevention, and References. The clinical descriptions are supplemented by 73 half-tone and 10 colored plates. In the appendix are tables showing the associated conditions, complications, and final diagnoses for several thousand admissions to the Herman Kiefer Hospital; treatment schedules for syphilis and rabies; the Detroit communicable disease regulations; a glossary of technical terms.

The book is a convenient compendium for health officers, internes, medical students, and nurses. Because of the necessarily brief space allotted to each disease, it is of an elementary rather than of an advanced character. Not only does the book have merit in keeping pace with the advances of medical science, but the author and his collaborators are equally competent in discussing both the clinical and public health aspects of these diseases. The book is distinctive in the balance achieved between prevention and medical care. KENNETH F. MAXCY, M.D.

The Story of Clinical Pulmonary Tuberculosis — *By Lawrason Brown. Baltimore: Williams & Wilkins,* 1941. 411 pp. Price, $2.75.

This posthumus book (Brown died in 1937) is much more than a story of clinical pulmonary tuberculosis. The three chapters: The Visit in 1700, The Visit in 1800, and the Visit in 1900 are artistically drawn pictures of the diagnosis and treatment with a rich background of the contemporary scene of life. There are chapters under the heading of Diagnosis of Early Tuberculosis, including Laennec and His Successors, Early Publications in Germany and Austria, Diffusion of Knowledge in England, Diagnosis in America. About 100 pages are devoted to the story of Modern Surgical Treatment of Pulmonary Tuberculosis. Under Some Sidelights of Importance, we find chapters on Laennec and His Writings, The Story of the Stethoscope and Early Medical Journals. Homer L. Sampson wrote a chapter on Diagnosis by X-rays and Edward W. Archibald a chapter on the Development of Surgical Methods in Treatment.

Brown, who was one of the most outstanding men of his time in clinical tuberculosis, failed to mention his own contributions to the story, though we find reference to them in Sampson's chapter. The author had personal acquaintance with many of the leaders in his field both in this country and

abroad; indeed he had many friends among them. He was a scholar and a student of history, particularly the history of medicine. His lectures on the history of tuberculosis given to postgraduate students at the Trudeau School were highly appreciated. Thus this book is not a compilation of *ad hoc* readings but the result of intimate knowledge acquired by many ways during long years.

The historical events Brown presents are always interesting because they are connected as phases of a development. The style has grace and color. The chapters by Sampson and Archibald are informative and interesting. The book might be enjoyed by persons who are interested in the development of the science and art of medicine, regardless of their field of work.

JULES FREUND, M.D.

The Premature Infant (Its Medical and Nursing Care)—*By Julius H. Hess, M.D., and Evelyn C. Lundeen, R.N. Philadelphia: Lippincott,* 1941. 317 pp., 74 ill. Price, $3.50.

The development by the authors of a large central station for the care of premature infants in the Michael Reese Hospital in Chicago has permitted organization of a highly specialized system of medical and nursing care. This book contains a detailed description of this system, stressing the particular problems of transportation of premature infants to the central station, of their segregation from other infants, of control of the temperature and oxygen content of the environmental air in the Hess oxygen unit, of furnishing a supply of human milk, and, finally, of providing adequate amounts of highly skilled nursing care.

A critical evaluation of alternative methods, for example, of artificial feeding, of oxygen therapy, or control of environmental temperature and humidity is not furnished. Furthermore, the bibliography is inadequate for a reader interested in learning the details of these alternative methods from the literature.

The discussions of physiology, of growth and and development, the factors causing prematurity, are not of the same caliber as the chapters on medical and nursing care.

The book is, then, a good exposition of the subject indicated in the subtitle —medical and nursing care (of the premature infant)—in the light of the authors' experience. Because the latter has been so extensive, the book is a valuable contribution and can serve as a guide for physicians and nurses who attend these infants and for administrators interested in setting up comprehensive plans for their care.

HARRY GORDON, M.D.

Sanitary Engineering — *By Harry G. Payrow. Scranton: International Textbook Company,* 1941. 482 pp. Price, $4.00.

While the general field of sanitary engineering has in comparatively recent years expanded to cover a large number of activities relating to community health and welfare, this textbook covers only those subjects which were the original conception of this branch of engineering, viz., water supply, sewerage, and water and sewage treatment. The subjects covered include hydraulics of water supply, stream flow (methods of measurement and hydrology), reservoirs and dams, ground water, water consumption, water intakes and distribution systems, pumping water, water treatment, quantity of sewage and storm water, sewerage systems, characteristics of sewage, sewage disposal and treatment, sedimentation and chemical precipitation, oxidizing processes, sludge treatment and disposal, miscellaneous treatments and sewage plant operation. The book should serve the author's announced intention that the text be used in an introductory course for sani-

tary engineers and to give civil and chemical engineers a glimpse of the problems involved in these branches of sanitary engineering. F. J. MAIER

Delinquency Control—*By Lowell Juillard Carr. New York: Harper,* 1941. 447 pp. Price, $3.50.

This book represents a fresh and vigorous treatment of an old sore-spot. As director of the Michigan Child Guidance Institute, the author knows what should and can be done, and he believes that, under informed leadership, juvenile delinquency can be materially reduced.

The limited measures in force today are still on a "myth-minded" level, and Dr. Carr cites examples to show how often complex matters are approached from the side of intuition and impulse. He maintains that modern skills must be applied to personal counseling, the elimination of blighted areas in the community structure, and the rejuvenation of organizations that fail, under present conditions, to reach youth who need help.

His analysis of social breakdown and personality conflicts is bolstered with pertinent statistics and challengingly set forth. The technics prevailing in our correctional institutions, probation departments and school systems are considered and found wanting in the face of an estimated 9,000,000 handicapped children under 18 in "high-risk" situations in the United States. School teachers fall short in the timely detection of emotional difficulties, courts do not consistently sift out the most hopeful prospects for probation, and probation itself too frequently degenerates into little more than a bookkeeping procedure.

Since conventional methods have not produced any appreciable decrease in delinquency, the author urges lay participation in the campaign, as in the coördinating council movement which started in California in the early 1930's, and has spread across the country, with organizations built around social agencies and dependable lay individuals in the community.

In his final chapter Dr. Carr describes the Michigan Child Guidance Institute, established in 1937 under the University of Michigan, and furnishing advisory services and personnel to communities which, under this direction, assume responsibility through their existing agencies for action on their own problems. Despite the niggardly appropriations voted by the legislature for this valuable work, local results thus far have been encouraging.

As an advanced textbook in juvenile delinquency, a review for those who need a "refresher" and a guide to anyone seeking practical suggestions that have vision but are not visionary, this volume should bring inspiration. To those whose primary interest is in public health it will prove doubly significant as demonstrating that the public health concept—not treatment alone but also control and prevention—applies with equal force in the field of delinquency.

AUSTIN H. MACCORMICK and
WILLIAM H. KINNEY

Orientation in School Health—*By Clair V. Langton, Dr.P.H. New York: Harper,* 1941. 680 pp. Price, $3.00.

After turning the pages—there are over 600 of them—from stem to stern and reading much, I emerged with a very satisfying feeling.

This is a textbook primarily for teachers and teachers in training. All prospective teachers ought to be familiar with it. It is fair and temperate. It was written to emphasize points in the school health field that have not been adequately stressed partly because they have not been readily available. Deliberately omitted are chapters on what health material to teach elementary

school children and how to teach. Physical education is also left out because these two subjects are believed to have been quite adequately covered elsewhere.

The author is also aiming at another group for he states that experience, training, and education have not given the educational administrator "a clear insight into what health is; how it may be obtained; and still less, *how* this work may be organized in the school."

The chapters are up to the minute. School health service is excellently covered. In addition to the control of disease in general, there are rich chapters on Nutrition, Oral Hygiene, and Tuberculosis. Evidently a long road has been traveled in the last 20 years in the lighting of school buildings. Sanitation and Planning of the school plant, including ventilation, is a practical chapter. The health of the teacher is given some attention.

References are plentiful, many from reports of committees of the A.P.H.A.

This book ought to help bring departments of education and public health closer together.

GEORGE T. PALMER, DR.P.H.

The Control of Tuberculosis in the United States—*By Philip P. Jacobs, Ph.D.* (rev. ed.) *New York: National Tuberculosis Association,* 1940. 387 pp. Price, $2.00.

The 1940 edition of *The Control of Tuberculosis in the United States* by the late Dr. Philip P. Jacobs should be read by every physician and worker interested in public health or in socio-economic problems relating to health. Moreover, every health and medical-social worker would profit by having a copy available for ready reference. Not only has there been an appreciable increase in our knowledge of the public health and social aspects of tuberculosis since the publication of the 1932 edition of this book, but there have been parallel development and improvement in administrative methods and technics which the author has included in this new edition.

Clinical tuberculosis in an individual is but a symptom of a community public health and economic problem. This book not only deals with the fundamentals in community organization and administration to meet the tuberculosis problem but, by reviewing the newer epidemiological or control measures, the author reveals new areas of administrative possibilities. Whether one's primary interest is concerned with the difficulties of organizing a public health program to meet community needs, or whether it is concerned with the administrative policies and procedures which would be conducive to sound public health education, economical and productive case finding, or circumstances related to the domiciliary control of the disease (especially as it may be related to public health nursing), this volume provides the key for solving these and similar problems. Moreover, the references selected and recommended by the author provide an excellent index of authoritative data and material pertinent to the many details of the tuberculosis problem.

In view of the declining tuberculosis death rate, the chapters on case finding and tuberculosis control, in particular, deserve to be read and reread. Not only does the text of these chapters contain many important and pointed statements, but throughout each chapter may be found a description of many current policies of organization and administration.

ROBERT E. PLUNKETT, M.D.

Medical Work of the Knights Hospitallers of Saint John of Jerusalem — *By Edgar Erskine Hume. Baltimore: Johns Hopkins Press,* 1940. 371 pp. Price, $3.00.

The historically-curious will be glad to see this story, first printed in three

numbers of the *Bulletin of the Institute of the History of Medicine* in 1938, now available in book form—for this is the only account in English of the work of these famous hospitallers. Organized in the 11th century they have fought their way across land and sea through the centuries protecting crusaders in medieval days or Spanish refugees today—any and all who needed help. Their hospitals in Rhodes and Malta were models for all the world to follow and even in World War II one of their ambulance units was the first to come to the aid of the victims of The Athenia who were brought into Galway Harbor.

Dr. Hume's story is well told—and not essentially interrupted by the wealth of documentary support he gives the text. There are 130 figures.

LEONA BAUMGARTNER, M.D.

Americans Live Longer!—*By W. W. Bauer, M.D. Indianapolis: Bobbs Merrill,* 1940. 219 pp. Price, $2.00.

In the first chapter of this refreshing book, the author reviews simply and clearly the accomplishments of medicine and public health that are contributing to longer and healthier lives for American people. The remainder of the book is a direct message to the person who has attained middle age with a desire to live to expectancy either without prematurely developing those afflictions of middle and older life or with a wish to live happily with his unpreventable health handicap.

Commonest causes of premature crippling and death after middle age, namely, heart disease, hypertension, glandular disturbances, cancer, diabetes, arthritis, and poor personal hygiene, are described in simple physiological terms. Emphasis is placed upon early signs of trouble and methods of preventing such trouble. The final chapter, A Philosophy of Health, should be read by everyone who has attained the age of forty and is looking for a pattern of behavior that will carry him happily and healthfully through the years ahead.

The book is especially recommended to the specialist in geriatrics, to the clinician who is adviser to middle and older aged patients and to the public health man interested in the prolongation of life and prevention of health accidents in our aging population.

CHARLES E. SHEPARD, M.D.

Personal Hygiene Applied — *By Jesse Feiring Williams, M.D.* (7th ed.) *Philadelphia: Saunders,* 1941. 491 pp. Price $2.50.

Two major difficulties attend the teaching of hygiene to college students. Most of these young people find it difficult to apply the principles of hygiene to their own and to community problems because of inadequate background in physical and social science. Most of them also have not acquired a point of view—a philosophy of living—that includes a consideration of positive health.

It is appropriate therefore that the author who has had many years of experience in teaching college students should emphasize in this seventh edition of his textbook five chapters developing a point of view, a *sine qua non,* for healthful living. The remainder of the book is devoted to the facts of anatomy, physiology, and bacteriology essential to an understanding of personal hygiene and an application of these facts to health problems of the individual. Although community health problems are touched upon throughout the book, no special reference is made to this subject.

There has been considerable revision in this edition which adds to orderliness of presentation. More space is devoted to mental components of physical health. There is a new section on vitamins, a new chapter on prevention of specific disease, a rewritten chapter on the endocrines, and an extension of material on human heredity. Teachers of college hygiene who are using this book as a

text will find the new edition a distinct improvement because its presentation is simpler and more orderly than former editions. Some may prefer to present the factual material in the latter chapters as an introduction to the philosophies expressed in earlier chapters. A carefully selected bibliography of recent publications at the end of each section will be found helpful for class discussion.

CHARLES E. SHEPARD, M.D.

Biology of the Laboratory Mouse —*Edited by George D. Snell. Philadelphia: Blakiston,* 1941. 497 pp. Price, $7.00.

This book is the result of the combined efforts of nine investigators to bring together a large part of the available information concerning the mouse. Much of the information assembled was scattered so widely through scientific journals devoted largely to special fields as to have made it available only with difficulty to individual investigators. The book was written for research workers, particularly for those interested in genetics, tumors, and infectious diseases. As it has been put aptly by the editor it "presents a vertical cross-section of biological knowledge rather than the more usual horizontal cross-section" and deals with the mouse alone.

The text is divided into thirteen chapters dealing with embryology, reproduction, histology, spontaneous neoplasms, gene and chromosome mutations, the genetics of spontaneous tumor formation, the genetics of tumor transplantation, endocrine secretion and tumor formation, the milk influence in tumor formation, inbred and hybrid animals and their value in research, parasites, infectious diseases of mice, and care and recording methods.

The book should be of considerable value to research workers who use mice as part of their experimental material.

FRANK L. HORSFALL, JR., M.D.

Rheumatic Fever in New Haven— *By John R. Paul, M.D. New York: Milbank Memorial Fund,* 1941. 176 pp. Price, $1.00.

Those who have followed Dr. Paul's studies in rheumatic fever (*A.J.P.H.*, Vol. 31, Page 611, June, 1941, and elsewhere) will be interested to see how he has brought to bear on the problems of one city our knowledge about this disease, using relatively new methods which he describes as "familial epidemiology, community epidemiology, and city epidemiology." Dr. Paul presents a picture of the clinical epidemiology of this chronic and acute systemic affection of protean nature which, as he points out, is a disease of childhood, a crowd disease, and commonest in temperate climates among urban people. It is fortunate that today's student of this disease can have this study to round out those of Perry and Roberts in England, of Maddox in Australia, of Clarke in Dublin, and of Hedley in Philadelphia. This study emphasizes the clinical aspects in relationship to the epidemiology of the disease rather than the statistical approach which has characterized many of the other studies.

Dr. Paul and the Milbank Memorial Fund are to be congratulated on this study which is unique in its field. The continuing influence of Edgar Sydenstricker, who had a long-standing interest in these studies, will be apparent to the reader.

R. M. ATWATER, M.D.

Fatal Partners: War and Disease —*By Ralph H. Major, M.D. New York: Doubleday, Doran,* 1941. 342 pp. Price, $3.50.

This otherwise brilliant, extremely interesting and important volume is marred for me by a tiny fault, not due to Dr. Major. This is the publisher's use, as the symbol for medicine, of the winged staff of Hermes, messenger of the gods and patron of commerce,

thieves, and prostitutes. The symbol of medicine is the staff of Aesculapius, a cane with a single coiled serpent. That the United States Army makes the same mistake is no reason why people who could know better should do likewise. One purpose of Dr. Major's superb historical survey is to show that armies still can learn much from medicine.

Dr. Major, Professor of Internal Medicine at the University of Kansas since 1921, has much experience and skill in popularization of practical medicine, as exemplified in his earlier volumes, *Disease and Destiny* and *The Doctor Explains*. The ease with which *Fatal Partners* may be read gives little indication of the laborious care in assuring the accuracy of its detail and the artistic development of its story.

Dr. Major, like a modern Homer, tells simply but challengingly the long story of the relation between war and disease, from the epidemic factors contributing to the downfall of ancient Greece and Rome, through the pestilential imbecility of the Crusades, the swashbuckling venereal warfare of the Renaissance, the hideousness of the Thirty Years' Total War, Baron Larrey's pitiful efforts to mitigate the sufferings of Napoleon's loyal followers, the self-sacrificing care of the wounded by Florence Nightingale, the reaction to the horrors of Solferino which led to Jean Henri Dunant's organization of the Red Cross, our own ridiculous "Manifest Destiny," the only decent achievement of which was to teach us how to control typhoid and yellow fevers, the deliberate reversal by the Japanese in the Russo-Japanese War of the usual four to one ratio of death from disease to death from fighting, to the tragedy of World War I, and the present. It is a fascinating and thought provoking story.

Firmly Dr. Major insists that war itself has contributed nothing to medicine. During war physicians continue their merciful service to the best of their ability. The best that war provides them in return is a vast laboratory in which to study the practical effects of whatever applications of their knowledge may be made. One of the greatest contributions to medicine, however, has come from that often misunderstood instrument, the United States Army. The Army Medical Library remains the most comprehensive and efficient repository of knowledge useful in medicine in the whole world. Perhaps, as a result of the present emergency, it will receive the fireproof building and full support it deserves. American physicians might help by telling this to their Congressional representatives.

CHAUNCEY D. LEAKE, M.D.

Sociology and Social Problems in Nursing Service — *By Gladys Sellew, Ph.D., R.N. Philadelphia: Saunders,* 1941. 344 pp. Price, $2.75.

Adequate nursing care requires an understanding of the patient, his background, and his relationship to the society in which he lives. An appreciation of the effects of social and industrial conditions on health and the interrelationship of social and health problems as well as an understanding of the cooperative efforts which are contributing to their solution are a part of the professional preparation of the nurse. The presentation of the principles of sociology and their application to nursing is a large order for a single small book. In her attempt to cover a large field briefly, the author sometimes seems rather didactic, and she does not always emphasize the social factors and resources which might be of most importance to the average nurse. The young student might be somewhat overwhelmed by the problems which are presented and feel that a return to a primitive civilization is the only solution.

The units dealing with personality as a product of social life, the family, the community, and medical-social problems

will give the student a background for understanding the social and health aspects of nursing, and may stimulate her interest in public health nursing. This book will help the student to see nursing in relation to the community and society as well as to the individual patient.

The material is well organized, and the outline for the course in sociology in *A Curriculum Guide for Schools of Nursing* is carefully followed. Although this book was written as a text for undergraduate nurses, it could be read with profit by public health nurses who have had no basic courses in sociology. Each unit includes a bibliography which will guide the reader to references giving a more complete treatment of the problems. The glossy paper does not contribute to ease in reading.

ELLA E. MCNEIL, R.N.

Sociology Applied to Nursing—*By Emory S. Bogardus, Ph.D., and Alice B. Brethorst, Ph.D., R.N. Philadelphia: Saunders,* 1941. 294 pp. Price, $2.50.

This book was written by a sociologist and a nurse as a text for the basic course in sociology for student nurses. The authors state that their aim is to develop a concrete treatment of sociological facts and principles and give a social setting for the profession of nursing. The material is organized according to the outline suggested in *A Curriculum Guide for Schools of Nursing,* and throughout the book application of psychological and sociological principles has been made to situations common to the nurse.

This book will give the young student nurse some understanding of the factors which affect personality development and of the special problems which the nurse meets in her professional activities. She should also gain some understanding of the organization and functions of the family and the community. Many of the subjects are treated very superficially, and the instructor will need to provide supplementary readings and interpret much of the material to avoid misconceptions on the part of the inexperienced student. The discussion of the health department, the visiting nursing association, the Red Cross public health nursing service, and the school health service is inadequate and confusing. Some of the references might be questioned as guides to a student in the selection of the most authentic sources of information.

Because of the oversimplification of much of the material, this book would not serve as a very satisfactory reference for public health nurses.

ELLA E. MCNEIL, R.N.

The Vitamin Content of Meat—*By H. A. Waisman and C. A. Elvehjem. Minneapolis: Burgess Publishing Company,* 1941. 210 pp. Price, $3.00.

This monograph will be a great convenience to investigators in the field of nutrition and to those engaged in such diverse fields as the vitamin assay of foods and the calculation of the vitamin content of human and animal dietaries. However, the scope of the book is too restricted and its presentation too technical to be of much value to the physician, the general reader, or the elementary student. On the other hand, it is an excellent monograph for advanced students of nutrition.

Data are given (mostly from the author's laboratory and hitherto unpublished) of the content in meat—raw and cooked—of the different members of the vitamin B complex—thiamin, riboflavin, nicotinic acid, pyridoxin, and pantothenic acid. The reputation of the authors is sufficient warrant for the reliability of these data.

There is a full discussion of the different assay methods of the members of the vitamin B complex, with comparative data on the results obtained by

different methods on the same material. This information is most timely and is badly needed.

Summaries are presented also of the vitamin A, D, E, K, and C content of meat. The data here were obtained from the literature.

A chapter is devoted to each of the vitamins of practical importance in human nutrition, giving the formulae and a brief discussion of the chemistry, pathology, and therapeutic uses. The discussion on therapy is uncritical and inadequate. To some extent this is compensated for by the large bibliography.

HENRY BORSOOK, M.D.

Annual Review of Physiology—Vol. III.—*By James Murry Luck and Victor E. Hall. Stanford University, Calif.: American Physiological Society and Annual Reviews,* 1941.

This volume is the third in the series of annual reviews of physiology, which forms a companion series to the *Annual Reviews of Biochemistry.* The editors have attempted to obtain reviews which present a critical analysis of outstanding papers in which the relation of the new work to that of former years is indicated, and in many instances they have been successful to a high degree. The review by Feldberg on Histamine and Anaphylaxis is an excellent example, and among others might be mentioned the section on physiological problems related to aviation in the review on Respiration, by Schmidt and Comroe, and the section on diet in relation to liver injury in the review on Liver and Bile by Hawkins. In such short accounts of the present status of important topics in Physiology the volume has its major value to workers in fields outside Physiology. The work is, however, of great value even when the author has limited himself to a critical résumé of the year's work in his field by presenting references and summaries in a readily available form.

HERBERT HOFF

One Hundred Years of Medicine in Minnesota—*Published by Minnesota State Medical Association,* 1941. 26 pp.

This publication by the Committee on Public Health Education of the Minnesota State Medical Association presents in pictorial form and with a minimum amount of text the story of a century of medical progress in Minnesota. The place of public health and of public health nursing is recognized with fair proportion and the reader can readily appreciate that high grade, modern medical care requires good facilities and is not a cheap commodity. This is a creditable production, comparing very favorably with similar efforts of other state medical societies.

R. M. ATWATER, M.D.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Definite, Positive, Clear—Its title tells you all you need to be told at this point about this excellent paper, which is commended to all.

BECKER, J. E. Nutrition in Pregnancy. Am. J. Nurs. 41, 11:1245 (Nov.), 1941.

"That One Talent Which Is Death to Hide"—Twenty-four statistical findings about the prevalence and causes of blindness come from the productive hopper of the National Health Survey. Of every hundred thousand, 83 were blind in both eyes, 326 in one. Diseases were the major cause of complete blindness, accidents of partial.

BRITTEN, R. H. Blindness, as Recorded in the National Health Survey—Amount, Causes, and Relation to Certain Factors. Pub. Health Rep. 56, 46:2191 (Nov. 14), 1941.

Ouch!—No specific dietary factor or metabolic condition has been proved to cause or control dental caries in the fully developed human tooth. This forthright conclusion ends a summary of the voluminous recent literature upon caries and metabolism. (There appears to be no reference to the papers on fluorine vs. dental caries, however.)

BUTLER, A. M. Metabolic Factors in the Cause and Control of Dental Caries. New Eng. J. Med. 225, 19:746 (Nov. 6), 1941.

Tough Food for (Administrators') Thought—Half a million men and women in the productive ages (20–64) are in institutions because of some serious physical handicap or incapacitating chronic disease. Sixteen million have the same troubles, but are at home. Only some fifty-odd millions, presumed to be in health, remain and they must carry the load of all. The several diseases and impairments are listed in the order of frequency. This is only a part of the dreadful information that you should have.

HAILMAN, D. E. Health Status of Adults in the Productive Ages. Pub. Health Rep. 56, 43:2071 (Oct. 24), 1941.

Next Steps for the Blind—Opportunities and responsibilities of official and voluntary health agencies in the conservation of vision are pointed out in this story of what has been accomplished by some health services.

HEERING, R. E. Helping America by Saving Sight in Childhood through Health Services. Sight-Saving Rev. 11, 3:179 (Sept.), 1941.

Health for the Country Cousin—In certain rural parts of the Province of Manitoba, medical service is given through "municipal doctors" who are engaged by the community at an approximate family levy of $4.50 per year. A survey of two years' experience in seven areas indicates that under the conditions prevailing the method is successful.

JACKSON, F. W. Morbidity Survey in the Municipal Doctor Areas in Manitoba. Canad. Pub. Health J. 32, 10:491 (Oct.), 1941.

Saving Children's Eyesight—Many more of us than the specialists in child hygiene will find this item a valuable bit of educational material. It is written in plain English for the laity but in the matter of ophthalmology,

who of us isn't in that category? Nine chances in ten, you too think that farsightedness is better than normal distance vision. It isn't.

KNIGHTON, W. S. Children's Eyes. Sight-Saving Rev. 11, 3:200 (Sept.), 1941.

One Small Straw That Points a Dreaded Wind — Before the war, deaths from tuberculosis in Glasgow were stabilized at 960 per annum. During the first two years of war the deaths increased by 200. And this increased mortality is maintained for 1941. The working ages suffered most, and this suggests the influence of overwork, strain, ill-spent leisure.

LAIDLAW, S., and MAC FARLANE, D. The Causes Underlying the Recent Increased Incidence and Mortality from Tuberculosis in Glasgow. Brit. M. J. No. 4212:436 (Sept. 27), 1941.

Icterohaemorrhagic Spirochetosis —An agglutination test is described which will demonstrate the presence of specific antibodies in Weil's disease of more than one week's duration. The pathologists probably know about this, and the rest of us won't be particularly interested, but the item impelled me irresistably to spell out the jaw-breaking heading.

PACKCHANIAN, A. Positive Agglutination Tests in Suspected Cases of Weil's Disease. Pub. Health Rep. 56, 45:2145 (Nov. 7), 1941.

Flies Found to Harbor Polio Virus —Large numbers of flies were collected about a summer (health?) camp in Connecticut in which poliomyelitis occurred and two carriers were detected. The flies were macerated in sterile water and the washings instilled or injected into monkeys. Typical experimental poliomyelitis was produced. A second specimen of flies was collected in Alabama near households where polio cases had occurred. Again it produced experimental poliomyelitis.

PAUL, J. R., *et al.* The Detection of Poliomyelitis Virus in Flies. Science. 94, 2443:395 (Oct. 24), 1941.

Preventing Congenital Syphilis— Pros and cons of the premarital and prenatal blood test laws are presented quite impartially. Though some impressive statistics of syphilis discovered through these measures are presented, the author finds it difficult to state his opinion upon the matter. In his conclusion he reports 10 per cent of fetal and neonatal deaths still due to syphilis.

PECKHAM, C. H., JR. Legal and Therapeutic Aspects of Syphilis and Pregnancy. J.A.M.A. 117, 22:1863 (Nov. 29), 1941.

That Ounce of Prevention—You'll agree with the observation in this paper that the ultimate solution of the problem of deficiency diseases lies not in their treatment but in their prevention through teaching and (more important) making it possible for the poor to secure the food they must have.

RUFFIN, J. M. The Diagnosis and Treatment of Mild Vitamin Deficiencies. J.A.M.A. 117, 18:1493 (Nov. 1), 1941.

Cultivating a Neglected Field— Postpartum care carried on for one year for 600 obstetric cases proved its value in preventing and treating sequelae of delivery. Child hygienists especially will be interested in the findings.

SEWALL, C. W., and MULLANEY, O. C. Postpartum Care: Preliminary Report on Studies in a Follow-up Clinic. New Eng. J. Med. 225, 20:777 (Nov. 13), 1941.

The Tuberculous After Three, Five, Ten Years—Thanks to annual physical examinations 62 per cent of the employees having tuberculosis were detected while in the minimal stage. Only 1.5 per cent of these minimal cases died, whereas a fifth of the moderately advanced cases and nearly half the far advanced cases died. Of the minimal cases that returned to work, three-quarters had been cured in a year

or less. Of the advanced cases, a third were cured after three years or more.

STEPHENS, M. G. Follow-up of 1,041 Tuberculous Patients. Am. Rev. Tuberc. 44, 4:451 (Oct.), 1941.

Mental Illness Can Be Prevented—If you are one of those who enjoy an occasional sortie into some field of little immediate applicability to your present job, then I think you'll like this series of papers on the Delaware "Human Relations Classes" in which a classroom teacher leads the children to a clearer understanding of themselves and to better mental health.

TARUMIANZ, M. A. How the Human Relations Classes Were Started (and three related papers). Understanding the Child 10, 3:3 (Oct.), 1941.

Clamping Down on Hash Houses and Juke Joints—When 77,000 troops barge into a state for a month to carry out maneuvers, health problems multiply, as one may quite readily understand. What was done to minimize the worst health hazards is told all too briefly in this excellent report.

WILLIAMS, W. C., and MCGINNES, G. F. Pub. Health Rep. 51, 43:2065 (Oct. 24), 1941.

BOOKS RECEIVED

EYE HAZARDS IN INDUSTRY. By Louis Resnick. New York: Columbia University Press., 1941. 321 pp. Price, $3.50.

COMMUNITY HYGIENE. By Dean Franklin Smiley and Adrian Gordon Gould. 3d ed. New York: Macmillan, 1941. 448 pp. Price, $2.50.

GYNECOLOGY AND FEMALE ENDOCRINOLOGY. By Emil Novak. Boston: Little, Brown, 1941. 605 pp. Price, $10.00.

OCCUPATIONAL DISEASES. Diagnosis, Medico-legal Aspects and Treatment. By Rutherford T. Johnstone. Philadelphia: Saunders, 1941. 558 pp. Price, $7.50.

TREATMENT OF THE PATIENT PAST FIFTY. By Ernst P. Boas. Chicago: Year Book Publisher, 1941. 324 pp. Price, $4.00.

COSMETIC DERMATOLOGY. By Herman Goodman. New York: McGraw-Hill, 1936. 591 pp. Price, $6.50.

PNEUMOCONIOSIS (SILICOSIS), THE STORY OF DUSTY LUNGS. A PRELIMINARY REPORT. By Lewis Gregory Cole and William Gregory Cole. New York: John B. Pierce Foundation, 1940. 290 pp. Free—apply direct to Foundation.

THE ANAEROBIC BACTERIA AND THEIR ACTIVITIES IN NATURE AND DISEASE. A SUBJECT BIBLIOGRAPHY. Supplement One, Literature for 1938 and 1939. By L. S. McClung and Elizabeth McCoy. Berkeley: University of California Press, 1941. 244 pp. Price, $3.50.

THE VALUE OF HEALTH TO A CITY. Two Lectures Delivered in 1873 by Max Von Pettenkofer. Translated by Henry E. Sigerist. Baltimore: John Hopkins, 1941. 52 pp. Price, $1.00.

FACTS ABOUT NURSING, 1941. By the Nursing Information Bureau of the American Nurses Association, 1941. 57 pp. Price, $.25.

CASES OF SYPHILIS UNDER TREATMENT. Cuyahoga County, March, 1940. By Howard Whipple Green. Cleveland: Joint Social Hygiene Committee, 1941. 51 pp.

ACTIVE CARBON. THE MODERN PURIFER. By John W. Hassler. New York: Industrial Chemical Sales Division, West Virginia Pulp and Paper Co., 1941. 159 pp. Apply direct to publisher.

GOOD TIMES WITH OUR FRIENDS. By Dorothy Baruch, Elizabeth Montgomery and William S. Gray. New York: Scott, Foresman & Co., 1941. 128 pp. Price, $.64.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

B. Randolph Allen, M.D., M.P.H., Box 95, Suffolk, Va., Health Officer

Myron J. Barker, M.D., Vernon Parish Health Unit, Leesville, La., Director

Clayton C. Benjamin, M.D., M.S.P.H., 124 S. Maple, Manistique, Mich., Acting Director, Alger Schoolcraft Health Dept.

Mildred E. Burton, M.D., Owsley County Health Dept., Booneville, Ky., Director of Public Health

Albert S. J. Clarke, M.D., M.P.H., Drew County Health Dept., Monticello, Ark., Medical Director

William N. Dawson, M.D., M.P.H., Ruth St., Maryville, Tenn., Health Director, Blount County Health Dept.

J. W. Duke, M.D., Knott County Health Dept., Hindman, Ky., Director

Edwin N. Hesbacher, M.D., Warren County Health Dept., McMinnville, Tenn., Director

J. McIver Jackson, M.D., Prince William-Stafford Health Dist., Manassas, Va., Health Officer

Roscoe C. Kash, M.D., M.P.H., Wilson County Health Dept., Lebanon, Tenn., Director

Seth W. Kellam, M.D., Box 553, Midland, Tex., Director, Midland-Ector County Health Unit

William R. Kelsay, Jr., M.D., Wayne County Health Dept., Monticello, Ky., Health Officer

R. Bruce Mallett, M.D., Box 326, Orange, Va., Orange County Health Officer

William Gregory Morgan, M.D., Daviess County Health Dept., Owensboro, Ky., Director

William Bruce Nelson, M.D., County Health Dept., Bay Minette, Ala., Baldwin County Health Officer

John H. Pasek, D.O., Mono County Hospital, Bridgeport, Calif., Health Officer

William P. Parker, M.D., County Court House, Nashville, Tenn., Asst. Health Officer, Davidson County Dept. of Health

R. Mel Perry, M.D., Sevier County Health Dept., Sevierville, Tenn., Director

Thomas Scarlett, M.D., 234 E. Market St., Harrisonburg, Va., Health Officer, Rockingham County Health Dept.

Charles P. Stevick, M.D., Box 96, Beaufort, N. C., Acting Health Officer, Carteret County Health Dept.

Murray P. Wichard, M.D., District Health Officer, Cherokee, Clay, Graham Health District, Murphy, N. C.

Laboratory Section

Howard L. Bodily, Ph.D., 1392 University Ave., Berkeley, Calif., Assoc. Bacteriologist U. S. Public Health Service

Mary P. Clapp, M.S., 6004 Greene St., Germantown, Philadelphia, Pa., Supervising Technician, Div. of Pneumonia Control, State Dept. of Health

Sophia M. Cohen, B.S., Div. of Labs. & Research, New Scotland Ave., Albany, N. Y., Asst. Bacteriologist, New York State Dept. of Health

Richard C. Neale, M.D., 1016 W. Franklin St., Richmond, Va., Director, Physicians' Service Laboratories

Erwin Neter, M.D., Children's Hospital, Buffalo, N. Y., Assoc. Attending Bacteriologist

Lieut. Frederick B. Thompson, Jr., 4th Corps Area Lab., Fort McPherson, Ga., Sanitary Chemist

Joseph S. Zellat, Ph.D., Arizona State Laboratory, Tucson, Ariz., Asst. Bacteriologist, U. S. Public Health Service

Engineering Section

Herman K. Clark, P. O. Box 1496, Corpus Christi, Tex., Regional Sanitary Engineer, State Dept. of Health

Steven W. Nichiporuk, B.S., 737 S. Wolcott St., Chicago, Ill., Asst. Sanitary Engineer, Cook County Public Health Unit

Lee T. Purcell, Pompton Lakes, N. J., Analyst and Sanitary Engineer, New Jersey Dist. Water Supply Commission

Food and Nutrition Section

Marjorie Grant, M.A., 620 S. Third St., Louisville, Ky., Nutrition Consultant, State Health Dept.

Jerald G. Wooley, M.D., Selkirk Court, Bannockburn Heights, Bethesda, Md., Bacteriologist, National Institute of Health

Maternal and Child Health Section

Mildred A. East, B.S., 2370 Clermont St., Denver, Colo., Inspector of Hospital and Maternity Homes, State Board of Health

Dorothy T. Pearse, Ph.B., M.A., Bureau of Maternal & Child Welfare, Health Dept., Washington, D. C., Supervisor of Medical Social Workers

Public Health Education Section

Hazel A. Hart, 105 E. 22nd St., State Charities Aid Assn., New York, N. Y., Field Secretary

Valeria McDermott, Ph.B., 5802 Blackstone Ave., Chicago, Ill., Supervisor, Educational Unit, Chicago Health Dept.

Morris Sussman, A.B., 189 Ponce de Leon Ave., San Juan, Puerto Rico, Director of Youth Personnel, National Youth Administration

Lester Taylor, M.D., 10515 Carnegie Ave., Cleveland, Ohio, President, Cleveland Health Museum

Netta W. Wilson, M.A., 4524 Edmund Blvd., Minneapolis, Minn., Writer on Dental Health Staff, State Dept. of Health

Public Health Nursing Section

E. Nora Blixt, 18400 Ilene Ave., Detroit, Mich., Public Health Nurse, Dept. of Health

Edith F. Colbert, R.N., M.A., Franklin-Gulf County Health Unit, Apalachicola, Fla., Staff Nurse

Anita I. Discon, B.S., 4230 Vincennes Place, New Orleans, La., Director, Hygiene and Home Nursing, New Orleans Chapter, American Red Cross

Virginia Ford, R.N., General Delivery, Fort Huachuca, Ariz., Public Health Nurse

Bess Hair, R.N., 661 Mulberry Ave., Clarksburg, W. Va., Harrison County Health Nurse

Agnes H. Haygarth, R.N., 1241 King St. West, Hamilton, Ontario, Canada, Director, Public Health Nursing, Dept. of Health

Mary L. Hewitt, R.N., Ridgecrest Ave., Box 271, Rutherfordton, N. C., Supervising Nurse, Rutherford-Polk Dist. Health Dept.

Adeline H. Hunt, R.N., Neighborhood League, Wayne, Pa., Public Health Nurse-in-Charge

L. Adelia Martin, R.N., B.A., Box 654, Carthage, Tex., County Health Nurse, Panola County Nursing Service

Mary P. Oliver, B.S., Cherokee-Clay-Graham Health Dist., Robbinsville, N. C., Public Health Nurse

Jeane E. Polk, R.N., Liberty County Health Dept., Liberty, Tex., Public Health Nurse

Louise C. Smith, R.N., M.S., Miller County Health Dept., Texarkana, Ark., Public Health Nurse, U. S. Public Health Service

Jeannette Snyder, B.N., M.A., 824 D. St., S.E., Washington, D. C., Supervisor, South East Nursing Office

Epidemiology Section

Philipp R. Rezek, M.D., Jackson Memorial Hospital, Miami, Fla., Pathologist

Unaffiliated

Neal E. Blanton, B.S., Cowlitz County Health Dept., Court House, Kelso, Wash., Sanitarian

Curtis R. Chaffin, M.D., M.P.H., 816 Oregon Bldg., Portland, Ore., Acting Director, Div. of Mental Hygiene, State Board of Health

Judson H. Clark, 627 W. Church St., Elmira, N. Y.

DECEASED MEMBERS

J. N. Baker, M.D., Montgomery, Ala. Elected Member 1930, Elected Fellow 1932, Health Officers Section

F. R. Dew, M.D., Oberlin, Ohio, Elected Member 1921, Elected Fellow 1923, Health Officers Section

R. Clifford Errickson, Long Branch, N. J., Elected Member 1937, Health Officers Section

Bernard Kohn, M.D., Philadelphia, Pa., Elected Member 1918, Elected Fellow 1923, Health Officers Section

Mrs. Frederick T. Lord, Boston, Mass., Elected Member 1912, unaffiliated

Charles Pecher, M.D., New York, N. Y., Elected Member 1938, Food and Nutrition Section

Roy C. Rehder, M.D., Mansfield, Ohio, Elected Member 1937, Health Officers Section

Ellen S. Stadtmuller, M.D., San Francisco, Calif., Elected Member 1929, Maternal and Child Health Section

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WANTED: The following issues of the *American Journal of Public Health*—April, 1911; February, 1937; January, 1938; February, 1939; July, 1941; and August, 1941. The American Public Health Association will be glad to pay postage for the *Journals*.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearing house on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

UNASSEMBLED EXAMINATIONS IN WEST VIRGINIA

The Merit System Council of West Virginia, Box 873, Morgantown, has announced that it is expected that unassembled examinations will shortly be given for the following positions in the West Virginia State Health Department.

Position	*Salary per month*
Chief of Medical Services	$325–$400
Ophthalmologist	275– 350
Director of County Health Work	350– 400
Director, Maternal & Child Hygiene	350– 400
Director, Communicable Diseases	350– 400
Director, Vital Statistics	350– 400
Director, Industrial Hygiene	350– 400
Assistant Director, Maternal & Child Hygiene	320– 375
Assistant Director, Communicable Diseases (Venereal)	320– 375
Assistant Director, Tuberculosis	320– 375
Venereal Disease Consultant	320– 375
Senior Health Officer	320– 375
Junior Health Officer	280– 320
Health Officer Trainee	$200

Residence in West Virginia has been waived in consideration of the applications for these positions. However, residents of the state may be given preference in making appointments. Complete information may be obtained by writing to the Merit System Council.

VACANCY IN LOS ANGELES CITY HEALTH OFFICER POSITION

The City of Los Angeles is seeking qualified applicants for the position of City Health Officer paying a salary of $7,200 per annum. While the city charter requires that candidates for this position be residents of the City of Los Angeles if possible, if insufficient competition for this examination is obtained, candidates who do not reside in the city may become eligible if they are otherwise qualified. From the experience of other agencies in this area it is probable that insufficient competition will be obtained and that it will be necessary to waive the residence requirements.

The City Health Officer is the Chief Administrative Officer of the City Health Department and plans and administers a broad public health program, including medical and inspectional services. He is responsible for the proper enforcement of health laws and ordinances and the prevention and control of communicable disease in the city.

Public health physicians who are interested in this position should communicate with the Los Angeles City Civil Service Commission, Room 11, City Hall, Los Angeles, California, for further information.

U. S. CIVIL SERVICE COMMISSION

The Commission has announced that applications will be received for positions as Senior Medical Officer ($4,600), Medical Officer ($3,800), and Associate Medical Officer ($3,200) for appointments in the Public Health Service, with the Food and Drug Administration, Veterans' Administration, and the Indian Service. Forms for application may be obtained from the U. S. Civil Service Commission, Washington.

Junior Public Health Nurse. A civil service examination for Public Health Nurse ($2,000) has been open for some time. Nurses who have been unable to qualify for this examination because of the experience requirement now have an opportunity to

qualify through a new Junior Public Health Nurse examination ($1,800) which requires no experience. Applications are also being received for examinations now open for Junior Graduate Nurse ($1,620) and Graduate Nurse for general staff duty ($1,800). Further information and application forms may be obtained at any first or second class post office or from the Civil Service Commission, Washington.

POSITIONS AVAILABLE

Young woman, trained in Home Economics, for group contact work in behalf of an important commercial organization whose products are useful in the protection of public health and the National Nutrition Program. Experience in the public health field or related fields is essential. Office in New York, some travel involved. Write **Box H**, Employment Service, A.P.H.A.

Southern State Department of Health seeks physicians qualified by training and experience as County Health Officers or as Pediatricians. Write **Box B**, Employment Service, A.P.H.A.

Western State Department of Health will consider applications from physicians with experience and a degree in public health. Write **Box S**, Employment Service, A.P.H.A.

Physician with public health training to serve as full-time County Health Officer in rural South Atlantic area. Salary $3,600 to $4,000. Write **Box C**, Employment Service, A.P.H.A.

County Public Health Nurses for New Mexico. Must have four months' postgraduate instruction under one of the recognized public health nursing courses and one year's experience. Must drive and have a car. Address inquiry to State Health Department, Santa Fe, N. M.

Physician with either public health training or experience in local health department administration to serve as health director in a county health department in mid-western state. Salary $4,000 and $500 travel (flat rate). Well established department with offices in attractive little city of 10,000. Write **Box T**, Employment Service, A.P.H.A.

Laboratory Director—Bacteriologist—$2,400. For combined hospital and health department laboratory with staff of 10 and visiting pathologist in charge of hospital aspects. Bacteriological experience and training especially desired. Opportunities for expanding program good. Reply **Box G**, A.P.H.A. Employment Service.

Wanted: Trained Public Health Nurse, starting salary $1,500 per year and traveling expense, increase to $1,700 within 6 months. Saginaw County Health Department, Saginaw, Mich.

The State Department of Social Security and Welfare, Crippled Children's Division, of Phoenix, Ariz., has three vacancies to be filled. Examinations will soon be held for orthopedic nursing consultant, nurse-physical therapist, and medical social worker.

Further information may be obtained by writing to the Merit System Supervisor, Room 208, 128 North First Avenue, Phoenix, Arizona.

PHYSICIANS WANTED IN CINCINNATI

Carl A. Wilzbach, M.D., Commissioner of Health of Cincinnati, has announced that there are vacancies for white male physicians, aged 23 to 50, graduates of recognized colleges of medicine, licensed to practise in Ohio, for appointment to the Cincinnati Health Department. Duties include surveillance over communicable disease, infant and child welfare work, medical service for sick poor, epidemiological surveys of communicable disease, examinations for work certificates, school teachers, etc., vaccination, medical school inspection. Salary $2,640 to $3,360 plus transportation allowance of $240 per annum. Eligible for a retirement system. Persons interested should communicate with Dr. Wilzbach, Commissioner of Health, City Hall, Cincinnati, Ohio.

PUBLIC HEALTH ENGINEER

Responsible professional public health engineering involving field investigations and office studies in the application of sanitary measures. The more difficult engineering and sanitation field surveys include supervision over public water supplies, sewerage systems and sewage treatment plants and review of plans for same, and promotion and supervision of sanitation programs. Minimum qualifications: Training and experience equivalent to 3 years' civil engineering experience, including 2 years in public health or sanitary engineering; *or* completion of an academic year of graduate study and a year's experience in sanitary or public health engineering; *and* graduation from a college of recognized standing with a major course in civil or sanitary engineering. The salary range is $205 to $250 per month depending upon experience. Apply **Box E**, Employment Service, A.P.H.A.

POSITIONS WANTED

ADMINISTRATIVE

Physician, M.D. Tulane, M.P.H. Johns Hopkins, age 31, experienced as health unit director, prefers administrative position in the South. **A–488**

Physician with M.P.H. from Johns Hopkins 1924, experienced as state director for communicable diseases, as county health officer and as director of field training center, will consider responsible position with good income. **A–483**

Dentist, University of Pittsburgh, D.D.S.; M.P.H. University of Pennsylvania 1941; experienced in practice, wishes an administrative position in public health, preferably at state level. **M–450**

HEALTH EDUCATION

Teacher and research worker, man, Ph.D., age 52. Extensive record as college professor of biology and hygiene and investigator, for the past two years engaged in research. **H–499**

Woman with M.S. in public health, University of Michigan, and Ph.D. in health education, New York University, experienced in public schools, teachers colleges, and community public health, now employed as health teaching supervisor, will consider position in school, organization, or industry. **H–236**

Young woman with Master's degree in Health Education, Teacher's College, Columbia University, and background of clinical laboratory work and biochemistry, seeks position as health educator in research or as laboratory assistant in public health. **H–494**

Health Educator, Negro, man with background of High School administration and M.S.P.H. from University of Michigan, seeks position in Health Education. Public agency or educational field. Excellent references. **H–497**

Woman, M.S. in public health, excellent graduate training in education, 8 years' experience as business executive (sales and publicity). Just completed year's research in community education. Seeks good administrative position. **H–496**

Health Educator, M.A. in Education, 10 years' background in community organization for public health education, also teaching of personal and community health at high school and college levels. Public health nurse, able to teach mental and social hygiene as well as general health education. East preferred. **H–498**

Health Educator. Man with M.S. in preventive medicine and public health. Negro. Seeks position in Health Education or field work with official or nonofficial agency. **H–500**

Health Educator, man 32, M.S.P.H. with excellent training and varied experience in education and public health. Would expect salary of $3,000. Prefers national or state organization. Excellent references. **H–405**

Woman with master's degree in health education, 12 years' successful experience in public school and college teaching, administration and research. Will consider position in normal school, public schools, or in official or nonofficial health agencies. Prefers South or East. Available at once. **H–501**

LABORATORY

Milk Sanitarian and Technologist, age 37, Ph.D. Bacteriology, Wisconsin, 10 years' experience in milk and food sanitation from industrial and official angle, seeks administrative position with opportunity for research or investigational work preferred. **L–381**

Experienced Bacteriologist, man, 56, with long record as successful university teacher, research worker, and head of department of bacteriology and public health, desires new location in educational, research, or public health organization. Available at once. **L–462**

Chemist, Sc.D., Biochemistry, Johns Hopkins University. Age 31. Public health laboratory experience, teaching experience. Desires position with promise of advancement, preferably in commercial organization. **L–461**

Laboratory Director, unusually well qualified and experienced man, aged 41, Ph.D. with training at Michigan and Maryland. Excellent references. Will consider administrative, teaching or research position in public health. **L–459**

Experienced bacteriologist, young man of 33, Sc.B., who for several years has been in charge of state laboratory doing public health and diagnostic bacteriology, immunology and serology, will consider opening. **L–427**

SANITARY ENGINEERING

Engineer, age 38, 3 years' experience as district sanitary supervisor, state department of health, together with work on plumbing, heating and ventilation. Will consider position in the plumbing or heating field or state department of health. Prefers middle western or western states. **E–453**

Public Health Engineer, M.S. Harvard, experienced in public health and industrial hygiene, wishes position of better sort in public health engineering or industrial hygiene. **E–470**

Public Health Engineer, M.S. Harvard, with more than 10 years' experience including 5 years with state division of sanitation, is available. **E–468**

STATISTICAL

Public Health Statistician. Young man, M.S.P.H. Michigan, now employed as supervisor of state health project, experienced in medical research, epidemiology studies and vital statistics, seeks position in city or state health department in Midwest. **S–458**

Woman with academic, business and research experience in vital statistics, seeks a position in the vital statistics division of a state or city health department, preferably as registrar. **S–459**

Experienced and well trained public health nurse, with background of tuberculosis, venereal disease, school, industrial, and generalized srevices, will shortly be available for appointment. Three years as director of state nursing service. Experienced as university teacher of public health nursing. M.A., New York University. **M–449**

Opportunities Available

PUBLIC HEALTH PHYSICIANS—(a) Physician qualified to serve as chief of Bureau of Medical Service, state health department; $400–$440; East. (b) Epidemiologist for key appointment in eastern city; administrative experience in health department required; $3,800–$4,800. (c) Director, department of health and physical education; school system of midwestern metropolis, $5,000–$6,000. (d) Health commissioner; physician under 40 with considerable public health training required; full-time appointment; $4,200. (e) Physician with background in public health desiring training in social hygiene; social hygiene division of municipal health department; unusual opportunity for training in epidemiological aspects venereal disease control, $2,400–$3,300. (f) Rural health officer; must be interested public health; but training unnecessary; $225–$300; South. (g) Young physician for public health appointment offering accredited training in public health obstetrics; minimum year's training obstetrics required; $150, travel allowance. (h) City physician; southern community of 25,000; southerner preferred. PH1-1, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

STUDENT HEALTH PHYSICIANS — (a) Woman physician for immediate appointment to student health department, college for women; enrollment over 2,000; woman under 40 with teaching experience preferred; $2,100, partial maintenance; nine-month term. (b) Young man particularly interested health education, qualified to assist in surgery, for student health appointment in exclusive small college; $3,600; two out of three summers free. PH1-2, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

CHIEF SANITARIAN—Young man with college degree (preferably in engineering) and postgraduate training public health, plus three–five years' field experience required; appointment is with district health department, midwestern county; $2,400, travel allowance; headquarters in college town. PH1-3, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

BACTERIOLOGISTS — Appointments available with large pharmaceutical house for technicians trained in biochemistry and bacteriology, Master's degree or equivalent desirable, but not required. PH1-4, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

PUBLIC HEALTH NURSES—(a) Maternal and child health advisory nurse; duties include assisting supervising nurses in organized health units to develop their maternal and child health program; degree, certificate public health nursing, postgraduate training either obstetrics or pediatrics required; $195, travel allowance. (b) Orthopedic field nurse; certificate public health nursing, postgraduate training orthopedics required; duties consist of giving direct service to crippled children in unorganized areas; $165, liberal daily allowance while in field. (c) Staff nurse for state health department; public health nursing certificate required; $135–$160, travel allowance, mileage; West. (d) Public health nursing supervisor; minimum year's public health training, followed by two years' public health experience required; $1,920, mileage. (e) Public health nurse; small New England community; public health nursing certificate required; $1,800. (f) Student health nurse; duties include supervision of both out-patient and in-patient departments of student health service, eastern university; supervising experience required; $1,300–$1,400, maintenance, for school year. (g) Out-patient department supervisor; degree, background of experience essential; public health training desirable; must be qualified to reorganize and supervise out-patient department of university hospital; $2,000, partial maintenance. PH1-5, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

Situations Wanted

PUBLIC HEALTH PHYSICIAN—B.S., M.D. degrees, state university; M.P.H., Johns Hopkins; four years, director of county health unit; recommended as highly skilled man in field of public health theory and administration. PH1-6, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Graduate of fairly large training school; B.S. in nursing, University of Washington; certified public health nurse; eight years, city and county health work; two years, director of nurses, child welfare organization; most recent appointment, consultant nurse in state department of health. PH1-7, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

BACTERIOLOGIST — A.B., M.A., midwestern university, bacteriology major; Ph.D., Yale, major immunology, minors public health, physiology; five years in charge of laboratory, large industrial company; no preference as to locality. PH1-8, Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.

NEWS FROM THE FIELD

THE NEW YORK ACADEMY OF MEDICINE ON " PLAIN WORDS ABOUT VENEREAL DISEASE "

THE Committee on Public Health Relations of the New York Academy of Medicine released the following statement on December 1:

The Committee . . . is seriously concerned with the information contained in *Plain Words about Venereal Disease*, by Dr. Thomas Parran and Dr. R. A. Vonderlehr that, despite the recent availability of better methods of treatment and prevention of gonorrhea and syphilis, the disease rates among the troops have been mounting during the year 1941. Irrespective of whether or not this claim is supported by the monthly venereal disease statistics for the current year which have not yet been released by the Surgeon General of the Army, the Committee on Public Health Relations is concerned that the controversy in Washington with regard to the propriety of publishing " Plain Words " may obscure the most important point at issue in this publication.

The reported attitude of some responsible military and civil officials in regard to the toleration and attempted regulation of commercialized prostitution in the vicinity of troop concentrations presents serious public health implications. Quite aside from the social and moral aspects of commercialized prostitution and the bribery, corruption and white slavery which it breeds, past experience has demonstrated that the medical examination of prostitutes is an untrustworthy method of venereal disease prevention and that organized prostitution, however regulated, is responsible for a large share of venereal disease among soldiers. One of the greatest triumphs of preventive medicine was accomplished by the celebrated General Order No. 77 issued by Pershing upon the advice of Dr. Hugh H. Young and Surgeon General Merritte W. Ireland to all commanders of troops in the AEF, which resulted in the lowest venereal disease rate ever recorded by any army up to that time. In view of this demonstration and the studies by Raymond Fosdick and Abraham Flexner, it is surprising that there are still any medical and lay advocates of the discredited method of so-called regulation of commercialized prostitution.

Commercialized prostitution is not officially approved or tolerated by responsible civil and military authorities in the State of New York, but we must nevertheless be concerned about the health and welfare of our young men in military service or in essential war industries in some other parts of the country.

In spite of the fact that communicable disease observes no state or local boundaries, there are still advocates for local option in the vicinity of military concentrations. Under the May Act passed by Congress in July 1941, the elimination of prostitution in the vicinity of military establishments is the law of the land. In this time of national peril, the protection of our military forces against the communicable diseases is of paramount importance.

The Committee on Public Health Relations of the New York Academy of Medicine wishes to record its opinion that commercialized prostitution still constitutes a most serious health hazard and that so-called regulation of prostitutes is thoroughly untrustworthy as a method of venereal disease control. The committee therefore endorses the major thesis of " Plain Words " by Drs. Parran and Vonderlehr and urges that the May law be invoked by the military authorities in localities adjacent to military concentrations whenever the U. S. Public Health Service and the new Division of Social Protection of the Federal Security Agency certify that they have been unable to persuade the responsible civil authorities to take effective action.

SUPPRESSION OF PROSTITUTION IN ARMY CAMPS

AMONG a number of resolutions which have grown out of the current controversy relating to the prevalence of venereal disease in the vicinity of army camps and with respect to the enforcement of regulations, especially the enforcement of the May Act by the Secretaries of War and of the Navy, are those from the Public Health Council of the State of New York and the Board of Managers of the New York State Charities Aid Association which are presented herewith.

Resolution passed by the Public

Health Council, New York State, November 28, 1941:

WHEREAS, published reports indicate commercialized prostitution exists in the immediate vicinity of certain of the military establishments of the United States with alleged official reliance upon "regulation" of houses of prostitution, including the medical examination of prostitutes, as an aid in preventing the spread of venereal diseases, and

WHEREAS, this method has been proven many times in the past not only valueless but conducive to a false sense of security on the part of the public, thereby leading to increased exposure and increased venereal disease, and

WHEREAS, despite modern advances in diagnostic methods, a like result is as inevitable now as in the past, since a medical certificate of freedom from evidence of infection issued to a commercialized prostitute can apply only to the moment at which the examination was made, and can give no assurance whatever of freedom from infection immediately thereafter, and

WHEREAS, the State of New York has at considerable expense for several years conducted an intensive program for the prevention and reduction of venereal diseases, and with such apparent success that the rate of newly acquired syphilis has been reduced by more than half in the past four years, and the rate of rejections by Selective Service Boards on account of the venereal diseases has been much below that of the country as a whole and markedly below that of many of the states to which many residents of New York State have been sent for military training, and

WHEREAS, the Public Health Council has a proper concern for the health of the residents of the State who have been inducted into military service and is justifiably apprehensive lest the important gains of recent years be seriously jeopardized by the exposure of men in such service to venereal infections, and

WHEREAS, in the opinion of the Public Health Council, so-called "regulated" prostitution, including the medical examination of prostitutes, is as dangerous now as it has been in the past and will wherever practised lead to increased exposure and increased venereal infection, therefore be it

RESOLVED, that in view of the national interest involved, there should be a clearly stated policy established by the high command directing every local commander to take all proper means at his disposal to suppress commercialized prostitution in the vicinity of military establishments and to coöperate actively with civil authorities in effectuating this objective rather than leaving the decision as to policy in this respect to the discretion of individual commanders, and be it further

RESOLVED, that the Secretary send a copy of this resolution to the President of the United States, the Secretary of War, the Secretary of the Navy, the Director of Defense Health and Welfare Services, the Chief of Staff of the Army, the Chief of Naval Operations, the Surgeons General of the Army, the Navy, and the Public Health Service, the Chairmen of the Committee on Military Affairs of the House of Representatives and of the Senate, and the Members of Congress from the State of New York.

Resolution adopted by the Board of Managers, State Charities Aid Association, December 12, 1941:

WHEREAS, during the first World War a law was enacted by which the Army and Navy Departments were given authority to eliminate prostitution in areas adjacent to military and naval camps and establishments, which law was carried into effect by the Army and Navy authorities with aid from local authorities, if available, with excellent effects as indicated by an unusually low infection rate of venereal diseases in the United States Army, and

WHEREAS, a similar bill introduced in Congress was approved and urged by this Board at its meeting in February, 1941, and subsequently became law, and

WHEREAS, it is currently reported that the Army authorities have not proceeded to enforce the May Act, and that the infection rate from venereal diseases in the present Army is very considerable, therefore

RESOLVED, that the Board of Managers of the State Charities Aid Association, on the recommendation of its Committee on Tuberculosis and Public Health, respectfully urges the authorities of the War and Navy Departments to make full use of the provisions of the May Act in all localities in which there is need therefor, and to indicate to all commanding officers of military and naval establishments that it is the settled policy of the Army and Navy that prostitution in areas near such establishments must be suppressed as a measure of protection of the health and efficiency of the American Army and Navy, and directing them to take all appropriate steps toward that result.

A MESSAGE FROM THE LATIN AMERICAN DELEGATION AT THE 70TH ANNUAL MEETING

SPEAKING for the Latin American Delegation at a luncheon meeting of the American Public Health Association in Atlantic City, N. J., October 17, 1941, Dr. J. C. Mussio-Fournier, the Minister of Public Health of Uruguay, expressed appreciation for the generous hospitality of the Pan American Sanitary Bureau and of its Director, Dr. Hugh S. Cumming. He expressed appreciation also to the American Public Health Association for having made possible the invitation to attend the 70th Annual Meeting and he congratulated the officers of the Association on the success of the meeting.

Continuing, Dr. Mussio-Fournier said:

The significance of this Congress is greater than that of a simple scientific meeting. America today is an oasis of peace in the midst of the most frightful storm through which humanity has passed. The same malignant forces which have trampled underfoot the rights and treasures which have been slowly accumulated in Europe is hovering as a terrible menace over the new world. Fortunately, America has reacted as one man in the face of the greatest danger which the continent has known since the Homeric days of her glorious independence.

Today at this important meeting there has been drawn up the first program for the sanitary and public health defense of the hemisphere. The Minister of Defense of Cuba, the Honorable Dr. Domingo F. Ramos, has contributed to our discussion a collaboration as complete as it is valuable.

America loves peace, but America loves liberty still more. The period of projects and discussions must end. The hour for resolution is at hand: rapid resolution, energetic resolution. All our moral and material forces must be rapidly blended into a single formidable defense. Only thus can we make of our America a fortress against which the fist of the aggressor may beat in vain. Our governments continue to maintain the diplomatic status of neutrality. But our peoples are fervent and enthusiastic adherents of the great English democracy which, with an epic resistance, perhaps heretofore unknown in the history of the world, is offering up even the last drop of its blood to preserve the liberty of conscience, the most precious moral treasure which civilized man has enjoyed.

This precious treasure will be saved, thanks to the generous and formidable aid which this great democracy of the North is so disinterestedly lending to the cause of civilization, as the result of the energetic and outstanding resolution of its great President, Franklin Delano Roosevelt. You may be sure that if events require it, the descendents of those great patriots, Bolivar, San Martin, Artigas, Sucre, O'Higgins, Juarez y Marti, and their glorious brothers in the struggle for independence, will also offer their blood in the immortal cause of liberty.

SOUTHERN BRANCH A.P.H.A. MEETS IN ST. LOUIS

A SUCCESSFUL meeting of the Southern Branch of the American Public Health Association was held in St. Louis, Mo., November 10–13, in the Municipal Auditorium. A program of general sessions and sessions of the Public Health Nursing Section and the Sanitation Section were well attended.

Organized in November, 1932, the Southern Branch has now held ten meetings, providing an opportunity for those in 17 southern states to share their public health experience and information. The Branch has met concurrently with the Southern Medical Association and its Public Health Section.

The Southern Branch has elected the following officers for the ensuing year:

President—P. E. Blackerby, M.D., Louisville, Ky.
First Vice-President—D. L. Cannon, M.D., Montgomery, Ala.
Second Vice-President—Mrs. Ruth George, Columbia, S. C.
Third Vice-President—L. M. Clarkson, Atlanta, Ga.
Secretary-Treasurer—R. H. Hutcheson, M.D., Nashville, Tenn.

The Engineers' Section of the Southern Branch has elected the following officers:

Chairman—C. H. Field
Vice-Chairman—R. E. Dorer
Secretary-Treasurer—J. L. Robertson, Jr.

At the meetings of the Governing Council of the Southern Branch it was reported that 16 states in the territory of the Southern Branch had appointed Membership and Attendance Committees to promote membership in the parent organization and in the Southern Branch. It was decided to redraft the Constitution and By-Laws to include all amendments and to provide that representation on the Governing Council from each of the southern states would be contingent upon each state paying the annual dues of $10.

The Governing Council provided a plan under which it is hoped that the Secretary of the Southern Branch can attend the forthcoming meeting of the Western Branch, and an invitation was extended to the Secretary and other officers of the Western Branch to be in attendance at future meetings.

The Public Health Nursing Section of the Southern Branch presented a request that in future meetings provision be made so that the Nursing Section might meet at some time other than the first or last days of the meetings of the Southern Medical Association.

Selected papers from the scientific program of the Southern Branch are before the Editorial Board of the *American Journal of Public Health*, and it is expected that several will be carried in the pages of the *Journal* during coming months.

THE NATIONAL SCIENCE FUND OF THE NATIONAL ACADEMY OF SCIENCES

THE National Academy of Science, with offices in Washington, D. C., has announced the establishment in April, 1941, of the National Science Fund. The Academy will receive and the National Science Fund will apply large or small gifts for all physical and biological sciences. The Fund also offers its services as adviser to any prospective donor to science.

The National Academy of Science was incorporated by Act of Congress, signed by Abraham Lincoln on March 3, 1863. The Academy is the official scientific adviser to the government and is in touch with scientific developments in the United States and other countries. It has an organization for reaching and consulting any special group of scientific investigators. Its membership now includes 324 leaders in all branches of physical and biological science, elected in recognition of highly distinguished achievements in scientific research.

In 1916 the Academy established the National Research Council prmiarily to coördinate the non-governmental scientific and technical resources of the country with the military and naval agencies in the interest of national security and preparedness. At the end of the war the Council was reorganized as a permanent organization for the promotion and maintenance of scientific research. Its membership is largely composed of appointed representatives of the major scientific and technical societies of the country and includes business men interested in engineering in industry.

With a view to setting up a single national center especially designed to advise donors to science and to assure them that their funds will be conserved and expended wisely and fruitfully, the National Science Fund has been created. Offices of the Fund are at 515 Madison Avenue, New York, N. Y. A brochure, *Philanthropy in Science*, can be obtained from the Fund on request.

NURSING SERVICES IN INDUSTRY

ON November 23, the Committee To Study the Duties of Nurses in Industry, from the Public Health Nursing Section, American Public Health Association, met in New York City to discuss the further conduct of the study which is being made in coöperation with the Division of Industrial Hygiene, National Institute of Health. Beside

the members of the committee, representatives from industrial nurses associations in Western Massachusetts, New York City, New Jersey, Connecticut, Indiana and Delaware attended the meeting.

Consideration was given to revisions of the form used for the preliminary study and the committee voted to enlarge its membership by inviting representatives from the American Nurses Association, and from the National League of Nursing Education. It is planned to establish a group composed of representatives from the American Association of Industrial Physicians and Surgeons, the American Industrial Hygiene Association, the American Medical Association Council on Industrial Health, the National Conference of Governmental Industrial Hygienists, and the National Association of Manufacturers' Committee on Healthful Working Conditions. It is expected that the study will get under way in January, 1942, and will require approximately one year to complete.

INDUSTRIAL HYGIENE STATE PROGRAMS

THE National Institute of Health has announced that with the completion of a new building to house its offices and laboratories by mid-January, the Arkansas State Board of Health is planning to begin an industrial hygiene program authorized by the state's occupational disease law adopted by referendum last November. The U. S. Public Health Service will lend the Board of Health a doctor, an engineer, and a chemist.

The Maryland State Department of Health under a law passed in 1939 has recently established a Division of Industrial Hygiene and allotted $10,500 for industrial hygiene activities during the state's current fiscal year. It is expected that the state will employ a physician as director for the new division and the Division of Industrial Hygiene of the National Institute of Health will lend an engineer and a chemist.

SURVEY OF MEDICAL SERVICES IN INDUSTRY

THE Division of Industrial Hygiene of the National Institute of Health, Bethesda, Md., has announced that the nation-wide survey of medical service facilities in industry which is being directed by W. J. McConnell, M.D., of the Metropolitan Life Insurance Company, in his capacity as Consultant to the U. S. Public Health Service is now in its preliminary stage. At present Dr. McConnell is surveying a number of industries in Pennsylvania to determine whether the proposed procedure and form for recording the data are adequate for the purposes of the survey.

NATIONAL DEFENSE IN INDUSTRIAL HYGIENE

IT has been reported that during the current year the research section of the Division of Industrial Hygiene of the National Institute of Health has a program of which 90 per cent pertains to national defense. More than 125 research projects have been undertaken and at present 91 are under way. These studies concern the toxicology of organic and inorganic substances, industrial pathology and bacteriology, analytical methods and services, problems of aviation medicine, and physics. Twenty-five additional problems have been outlined for investigation in the near future. Particular emphasis has been placed on studies of the toxicity of explosives, solvents, metals used in airplane and munitions manufacture, and components of synthetic rubbers and plastics.

SOUTHERN BRANCH, A.P.H.A., MEMORIALIZES DR. J. N. BAKER

THE following resolution was unanimously adopted by the Governing Council of the Southern Branch, Ameri-

can Public Health Association, at its 10th Annual Meeting in St. Louis, Mo.

WHEREAS, on the death of Dr. J. N. Baker on November 9, 1941, the South has lost one of its ablest physicians, one of its most distinguished state health officers, and one of its finest gentlemen, and

WHEREAS, Dr. Baker exemplified the highest order of Southern culture, sportsmanship, gentleness, consideration for others combined with constructive leadership in pioneering progressive public health procedures, therefore be it

RESOLVED, that the Southern Branch of the American Public Health Association record its profound sense of loss in the death of Dr. Baker, and be it further

RESOLVED, that a copy of these resolutions be sent to Mrs. J. N. Baker, the Secretary of the Alabama State Medical Association and the Secretary of the American Public Health Association, and be it further

RESOLVED that a copy of these resolutions be spread upon the Minutes of the Southern Branch of the American Public Health Association.

DOROTHY DEMING RESIGNS AS GENERAL DIRECTOR, N.O.P.H.N.

GRACE ROSS, R.N., of Detroit, President of the National Organization of Public Health Nursing, has announced that the resignation of Dorothy Deming, R.N., as General Director has been accepted effective January 1, 1942. Miss Deming had requested to be relieved in October, 1940, and again in March, 1941. In accepting her resignation the Board expressed its indebtedness to Miss Deming for her 14 years of devoted service, during several years of which she edited *Public Health Nursing*, later becoming General Director.

RUTH HOULTON APPOINTED GENERAL DIRECTOR N.O.P.H.N.

ANNOUNCEMENT has been made of the appointment of Ruth Houlton, R.N., as General Director of the National Organization of Public Health Nursing, effective January 1, 1942, on the resignation of Dorothy Deming, R.N. Miss Houlton has been with the N.O.P.H.N. since 1935, coming from the Visiting Nurse Association in Minneapolis. She has been Associate Director of the N.O.P.H.N. for the last 6 years.

U. S. INDIAN SERVICE HOLDS REGIONAL MEDICAL MEETING

A DISTRICT medical meeting of the U. S. Indian Service for California, Nevada, and Utah, was held in November at Reno, Nev. Participating in a program which included national defense, tuberculosis management, the control of trachoma, problems in nutrition, health education, and other clinical subjects, were about 20 physicians of the Service under Dr. Ralph B. Snavely, District Medical Director. Other speakers included Fred T. Foard, M.D., Surgeon U. S. Public Health Service, San Francisco; David Holladay, M.D., of the California Department of Public Health; O. C. Moulton, M.D., President of the Nevada Tuberculosis Association; Mrs. Christie A. Thompson, State Supervisory Nurse, Reno, Nev., and W. W. White, Sanitary Engineer of the Nevada State Health Department, Reno.

FAMILY-COMMUNITY PROJECT OF ADDISON, MICH.

THE Family-Community Project of Addison, Mich., has been announced for this rural community under the sponsorship of Albion College to begin January 1, 1942. An annual grant of $10,000 has been made by the Kresge Foundation, and Dr. Regina Westcott Wieman, psychologist and social counsellor, has been appointed director. The project will be related to two courses in human relations and social technics in the Albion College curriculum.

President John L. Seaton of Albion College, referring to the tremendous stresses and strains on family relationships which the present period has

brought, has pointed out that the family is the social unit which can make for a more abundant American life. The Addison workshop, in combination with the courses in social technics conducted during the evenings, will be open to professional workers already engaged in health or community work.

AMERICAN RED CROSS ENROLLS MEDICAL TECHNOLOGISTS

AS of November 30, 1941, the American Red Cross in Washington announced that a total of 3,180 medical technologists of various sorts had been registered, of whom 286 were chemical laboratory technicians, 202 dental hygienists, 219 dieticians, 408 laboratory technicians and 219 x-ray technicians.

Enrollment is still open for persons in various grades.

A.P.H.A. ANNUAL MEETING BADGES

THE Army Medical Museum, Washington, D. C., would like to receive a collection of badges representing any past meeting of the American Public Health Association. At the request of Dr. Harry A. Davis, Major U.S.A. Retired, this request is given publicity in the thought that some member may wish to donate to the Museum a collection of these badges.

The Museum has recently added to its collection a medal commemorating the 50th Anniversary of the Association and the 100th birthday of Dr. Stephen Smith, founder, as well as a replica of the Sedgwick Memorial Medal.

ASSOCIATION OF SCHOOLS OF PUBLIC HEALTH

THE newly organized Association of Schools of Public Health held its first Annual Meeting in New York City December 20. Institutions holding membership in the Association are Columbia, Harvard, Johns Hopkins, Michigan, North Carolina, and Toronto. Lowell J. Reed, Ph.D., of Johns Hopkins, has been President, Milton J. Rosenau, M.D., of North Carolina, Vice-President, and Henry F. Vaughan, Dr.P.H., of Michigan, Secretary.

SOCIAL HYGIENE DAY

THE American Social Hygiene Association announces that the Sixth National Social Hygiene Day will be observed on Wednesday, February 4, 1942. The theme is "Keep America Strong — Help Build Better Health."

The American Social Hygiene Association, 1790 Broadway, New York, N. Y., will provide advice and will suggest activities for coöperating groups.

PHYSICIANS NEEDED IN DEFENSE AREAS

DR. THOMAS PARRAN, Surgeon General of the U. S. Public Health Service, has announced that there is a need for physicians to practise in some defense areas. Physicians interested in securing further information should address Mr. George St. J. Perrott, National Institute of Health, Bethesda, Md.

STUDENTS OF PUBLIC HEALTH IN MICHIGAN

THE *News Letter* of the University of Michigan School of Public Health reports that at present there are 138 students pursuing the curriculum in public health at the University of Michigan. Nine of these students come from 7 foreign countries. The remaining 129 come from 30 states widely scattered. Michigan, Illinois, and Wisconsin have the highest representation—43 students are trainees.

ORAL HEALTH GROUP

THE Oral Health Group of the American Public Health Association has announced the election of Dr. C. R. Taylor of the Bureau of Public Health Dentistry, Michigan Department of Health, as its new *Secretary*, with Dr. A. O. Gruebel of Missouri as *Chairman*.

MICHIGAN PUBLIC HEALTH ASSOCIATION

AT its recent Annual Meeting, the Michigan Public Health Association elected the following new officers to serve until November, 1942:

President: William R. Davis, D.D.S., Lansing
President-elect: Emilie G. Sargent, R.N., Detroit
Vice-President: B. H. Warren, M.D., Grosse Pointe
Representative to A.P.H.A. Governing Council: William R. Davis, D.D.S.
Secretary-Treasurer: Marjorie Delavan, Lansing

The society announces that its 22nd Annual Meeting will be held in Grand Rapids, November 11–13, 1942.

IDAHO PUBLIC HEALTH ASSOCIATION

THE following new officers were elected by the Idaho Public Health Association at its second Annual Meeting held in October:

President: Dean John R. Nichols, Pocatello
First Vice-President: H. H. Rhodes, Coeur d'Alene
Second Vice-President: Mrs. R. L. Brainard, Wardner
Third Vice-President: Mrs. Otto Leuschel, Lewiston
Fourth Vice-President: Mrs. Emma Clouchek, Twin Falls
Fifth Vice-President: A. H. Christiansen, Boise
Secretary: H. C. Clare, Boise
Treasurer: Lucy M. Higgins, Boise

L. J. Peterson was continued as the society's representative to the Governing Council of the A.P.H.A. and Fred T. Foard, M.D., of San Francisco was elected the first Honorary Member of the Idaho Public Health Association.

ILLINOIS PUBLIC HEALTH ASSOCIATION

THE Illinois Public Health Association at its Annual Meeting held on December 4, 1941, elected the following officers for the coming year.

President—H. F. Babbitt, M.S.
Vice-President—W. D. Dotterrer, B.S.
Secretary-Treasurer—H. A. Orvis, M.D.

Council members holding over until December 1942:

Alice Miller, C.P.H.
J. H. Beard, M.D.
E. A. Piszczek, M.D.

Council member elected for one year:

Melvin H. Dobbs, B.S.

Council members elected for two years:

Mabel McClanahan, R.N.
E. K. Musson, M.D.
H. J. Shaughnessey, Ph.D.
W. W. Talbert, M.D.

TEXAS PUBLIC HEALTH ASSOCIATION

AT its 19th Annual Meeting held in Corpus Christi in November the Texas Public Health Association elected the following officers to serve for the ensuing year:

President—Burke C. Brewster, M.D., Fort Worth
President-elect—Horace E. Duncan, M.D., Dallas
First Vice-President—Harold A. Wood, M.D., Austin
Second Vice-President—Katherine King Baker, R.N., San Antonio
Executive Secretary—Alan C. Love, Austin

The 1942 Annual Meeting of this Society will be held in Austin in the fall.

THE AMERICAN SOCIETY OF TROPICAL MEDICINE

THE American Society of Tropical Medicine held its 37th Annual Meeting in St. Louis, November 10 to 13. The officers elected were as follows:

President—Dr. Ernest Carroll Faust, New Orleans, La.
President-elect—Dr. N. Paul Hudson, Columbus, Ohio
Vice-President—Dr. Joseph S. D'Antoni, New Orleans, La.
Editor—Col. Charles F. Craig, San Antonio, Tex.
Secretary-Treasurer—Dr. E. Harold Hinman, Wilson Dam, Ala.
Councilors—Dr. Andrew J. Warren, New York, N. Y., Col. James S. Simmons, Washington, D. C.
Member of Editorial Board—Dr. Justin Andrews, Atlanta, Ga.

During the meetings the Bailey K. Ashford Award in Tropical Medicine was presented to Dr. Lloyd E. Rozeboom of the Johns Hopkins School of Hygiene and Public Health, Baltimore.

HARBEN LECTURES

THE Harben Lectures of the Royal Institute of Public Health and Hygiene were given this year at the University of Toronto, December 1, 2, and 3, by Elmer V. McCollum, Ph.D., Professor of Biochemistry at the School of Hygiene and Public Health, Johns Hopkins University, Baltimore. The subject was "Nutritional Science and Public Health."

DELAWARE PUBLIC HEALTH ASSOCIATION ORGANIZED

AT a meeting in Wilmington, Del., on November 28, the Delaware Public Health Association was organized and the following officers elected:

President—Edwin Cameron, M.D., M.P.H.
First Vice-President—G. H. Gehrman, M.D.
Second Vice-President—Mrs. Anna Van W. Castle, R.N.
Secretary—G. Taggart Evans
Treasurer—Roger Murray, M.D.

Steps are being taken to apply for affiliation of the Delaware Public Health Association with the American Public Health Association.

AMERICAN ACADEMY OF TROPICAL MEDICINE

AT its meeting on November 12 in St. Louis, the Theobald Smith Gold Medal of George Washington University was awarded to Admiral E. R. Stitt, M.C., U.S.N., retired. The following officers were elected for the year 1942:

President—Dr. H. C. Clark
Vice-President—Dr. L. W. Hackett
Treasurer—Dr. T. T. Mackie
Secretary—Dr. E. C. Faust
Councilor—Dr. A. C. Chandler

AMERICA'S TOWN MEETING OF THE AIR announces a $1,000 prize essay contest on the subject "What Must We Do to Improve the Health and Well-being of the American People?" Two sets of identical prizes are offered for adults and youths. Persons 21 years of age and over are privileged to compete in the Adult Division, and persons under 21 years of age in the Youth Division. The first prize in each division is $250 in cash plus a free trip to New York to appear on "America's Town Meeting of the Air"; the second prize $100 in cash; the third prize $50; and there are 10 prizes of $10 each for honorable mention.

Essays are not to exceed 1,000 words in length. Envelopes containing essays must be postmarked not later than February 1, 1942. Contestants are requested to indicate on their essays whether they are entered in the Adult or Youth Divisions.

Essays should be addressed to:

Essay Contest Editor
Town Hall
123 West 43rd Street
New York, N. Y.

MC GILL OFFERS DIPLOMA IN VETERINARY PUBLIC HEALTH

DR. GRANT FLEMING, Chairman of the Department of Public Health and Preventive Medicine at McGill University, Montreal, has announced the organization of a postgraduate course for veterinarians at McGill University in the Department of Public Health and Preventive Medicine of the Faculty of Medicine, leading to a Diploma in Veterinary Public Health (D.V.P.H.) to prepare veterinarians for the public health services and for employment with commercial firms engaged in animal industry. The first class enrolled for the session 1940–1941.

As in the case of all undergraduate students in the professions, the undergraduate training for the veterinarian

aims to prepare him for general practice. Through this graduate course he is prepared to undertake public health work in accordance with the present demands of the public health program where the veterinarian has been brought into the organization to assume responsibilities in connection with food inspection, particularly with the control of milk supplies.

AMERICAN STANDARDS ASSOCIATION

THE American Standards Association has announced the completion and approval of the American Defense Emergency Standard Allowable Concentration of Cadmium–Z37.5–1941. The standard as at present formulated will be in effect only during the period of the emergency, after which it will be reviewed by the Sectional Committee.

SOCIAL SERVICE AND DEFENSE

"MOST welfare officials will feel a strong and almost overwhelming desire to be a part of a bombing crew headed for Japan. We would want to do it even if we knew it was to be a one way flight. But let's be sensible. We know that most of us wouldn't make third rate mechanics. There is a job that we do know. It's a job which is vital to defense. It's a job essential to the maintenance of morale."

"Eric Biddle speaking before the Senate Finance Committee quoted a high British official as saying that *the greatly expanded social services in England did as much to win the Battle of Britain as the RAF*. If this is true, our job is one of major importance. Most people fear loss of security even more than they fear death by bombing. They are very sensible to feel this way because British experience indicates that modern war threatens their homes more than it does their lives. The English people know that no matter what happens to their homes as a result of air raids they don't have to worry about their economic security. Their universal insurance will pay for and enable them to rebuild—some day. Through the social services their families will be fed, clothed, given shelter and medical care. What is lost is lost by all. What is saved is for the use of all. On such a foundation morale is built."—*Washington News Letter on Social Legislation.*

MARYLAND ADOPTS REGULATIONS FOR CONTROL OF COMMUNICABLE DISEASES

DR. RILEY recommended that regulations for the control of communicable diseases, as prepared by the American Public Health Association, be used and adopted by the State Board of Health. After discussion, on motion of Dr. Williams duly seconded and carried, it was ordered that the Report of the Subcommittee on Communicable Disease Control of the Committee on Research and Standards of the American Public Health Association, 1940 revision, as adopted by the United States Public Health Service (in their *Reprint 1697*), entitled The Control of Communicable Diseases, be adopted by the State Board of Health as a guide for policy determination in the matter of controlling communicable diseases in the State of Maryland.—*Excerpt from Minutes of Meeting of State Board of Health held on November* 27, 1941.

PERSONALS

Central States

W. W. BAUER, M.D.,* was designated to represent the American Medical Association on the Committee for the Study of Voluntary Health Agencies, which is being established by the National Health Council, New York, N. Y.

RICHARD F. BOYD, M.D.,† of Topeka, Kan., has been appointed Director of the Midland County Health De-

* Fellow A.P.H.A.
† Member A.P.H.A.

partment, succeeding DR. KALMAN S. VON HAITINGER, who resigned to engage in private practice in Midland. Dr. Boyd has been Director of Local Health Services for the Kansas State Board of Health.

JOHN A. CARTER, M.D.,† of Batavia, Ohio, who has been Health Officer of Clermont County since 1936, has been named Health Officer in Middletown County.

PAUL R. ENSIGN, M.D.,† of Topeka, Kan., has been named Director of the Boise-Ada County Health Unit, Ida., effective June. Until that time DR. GUSTAVUS DENTON BOCK, Boise, will be Acting Director.

BENJAMIN C. HOUGHTON, M.D., of Columbus, Ohio, has been appointed Local Health Commissioner of Upper Arlington.

OLIVIA T. PETERSON, R.N.,† Superintendent of Public Health Nursing, State Department of Health, Minneapolis, Minn., has been given leave to become Assistant Director of the American Red Cross Section on Home Nursing. Her offices are at National Headquarters, Washington, D. C.

Eastern States

MARIE E. DOHM, who since 1931 has been a member of the staff of the State Committee on Tuberculosis and Public Health of the New York State Charities Aid Association, has resigned to join the staff of the Illinois State Department of. Health as a nutritionist in the Division of Child Hygiene.

JOHN E. GORDON, M.D.,* Professor of Preventive Medicine and Epidemiology in the Harvard Medical School, Boston, and now Director of the American Red Cross Harvard Hospital Unit in England, arrived in New York on November 10 for a furlough, expecting to return to England in about one month.

GILBERT E. MOORE, M.D., is the Acting Health Officer of Darien, Conn., to fill the vacancy caused by the death of DR. WILLIAM H. SLAUGHTER.

ROY V. SANDERSON, M.D., has been appointed Health Officer of Winsted, Conn., to succeed DR. FRANCIS GALLO.

ALFRED SCHIAVETTI, M.D., Stafford Springs, Conn., has been named acting Health Officer of West Willington, during the absence of DR. FRANK B. CONVERSE.

Southern States

LEONARD C. BATE, M.D., Health Officer of Greenup County, Ky., has been appointed to a similar position in Iron County, succeeding Dr. LORIN E. KERR, JR., of Stambaugh, who resigned to go to Ohio.

JOHN M. BEARDEN, M.D., has been appointed Health Officer of Laurens, S. C., succeeding DR. L. M. PRICE, effective August 15.

MARY G. DEVINE, Acting Consultant Nurse, Division of Industrial Hygiene, National Institute of Health, Bethesda, Md., has been loaned to the Industrial Hygiene Service of the Georgia State Department of Public Health, Atlanta.

ROBERT D. HICKS, M.D., of Chester, S. C., has been named Director of the Chester County Health Department, succeeding DR. WALTER G. CRAWLEY, JR., of Lancaster, who has been dividing his time recently between Chester and Lancaster Counties.

FRANCIS C. LAWLER, Sc.D.,† formerly Assistant Professor of Bacteriology and Public Health at the University of Oklahoma, School of Medicine, has accepted the Associate Professorship of Bacteriology in the School of Medicine at the University of North Dakota.

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† Member A.P.H.A.

JOHN I. MITCHELL, M.D., of Haleyville, Ala., has been appointed Health Officer of Winston Co., succeeding DR. WILLIAM A. DODSON, JR., of Double Springs, who resigned to accept a position with the U. S. Public Health Service.

WARREN H. REINHART, Associate Chemist of the Division of Industrial Hygiene, National Institute of Health, has been loaned to the Tennessee Valley Authority for an indefinite period to assist with the engineering control of health hazards* associated with the construction of a hydro-electric project.

HENRY G. STEINMETZ, M.D., Arlington, Va., has been placed in charge of the health district incorporating Page, Warren, and Shenandoah Counties, succeeding DR. JOHN B. H. BONNER, of Luray, who resigned to enter private practice in Elizabeth City, N. C.

SAMUEL D. STURKIE, M.D., formerly of Charlottesville, Va., Venereal Disease Control Officer of Alexandria and Fairfax County, has been appointed Health Officer of Smyth County, succeeding DR. WILLARD W. GRIGGS, of Marion, who resigned to take charge of the Health Department in Newport News.

T. L. WADDLE, M.D.,† formerly District Health Officer of District No. 2, Dexter, Mo., has been transferred to District No. 4, Fredericktown.

THE HONORABLE HENRY A. WALLACE, Vice-President of the United States, was decorated on December 3 by the President of Cuba with the Order of Carlos Finlay during his visit in Cuba.

JAMES H. WELLS, M.D., Health Officer of Fulton and Hickman Counties, Ky., has been appointed Health Officer of Bell County to succeed DR. ADAM STACY, JR., of Pineville, who resigned to enter private practice.

* Fellow A.P.H.A.
† Member A.P.H.A.

Western States

STUART W. ADLER, M.D.,† has been appointed Director of the Division of Maternal & Child Health of the New Mexico State Department of Public Health, Santa Fe, succeeding DR. HESTER B. CURTIS, resigned. DR. ADLER is a graduate of the Harvard Medical School and recently has been in practice in Albuquerque.

CHARLES H. BARR, M.D., of Portland, Ore., has been named Health Officer of Canby.

WALLACE D. HUNT, M.D.,† of Seattle, Wash., for 6 years Health Officer of King County, has been appointed Senior Surgeon in the U. S. Public Health Service, and assigned to duty as Regional Medical Officer of the Ninth Civilian Defense Area with headquarters in San Francisco, Calif.

LOUIS J. WOLF, M.D., of Portland, Ore., has been named Acting City Health Officer of that city. He succeeds DR. ADOLPH WEINZIRL, who is now on the staff of the University of Oregon Medical School.

DEATHS

JACOBO FAJARDO Y PUNO, M.D.,† of Manila, P. I., died July 23. He was Past President of the Philippine Public Health Association, and formerly Executive Health Officer of the Philippine Islands, as well as Director of Health, Philippine Health Service.

ELLEN S. STADTMULLER, M.D.,† Chief of the Bureau of Child Hygiene, State Department of Public Health, San Francisco, Calif., died on November 26. DR. STADTMULLER was a member of the American Public Health Association from 1929.

CONFERENCES AND DATES

American Association for Social Security. New York, N. Y. Probably April.

American Association of School Administrators. San Francisco, Cal. February 21–26.